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Affect, Work Engagement and Job Performance of Frontline Workers“

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Physical Contact with Others While Working in Times of COVID-19 Pandemic – Resource or Threat?

Affect, Work Engagement and Job Performance of Frontline Employees

Since the beginning of the COVID-19 pandemic, research on COVID-related factors and their impact on human beings has been grown rapidly. There has also been a great deal of interest in researching the new situation in industrial and organizational psychology, due to the far-reaching changes in working conditions as a result of the pandemic.

An enormous increase in workload, short-time work, fears of losing the job, working from home, and other burdens (Korunka et al., 2020) have now been part of worker's everyday life. While those who had to work from home from one moment to another had to deal with blurring boundaries of work and nonwork (Sinclair et al., 2020), workers in system-maintaining jobs were confronted with an increase in workload (Korunka et al., 2020) and the risk of infecting themselves and others with the virus because of physical contact with others while working (Smith, 2020).

Frontline workers characterized not only by hospital staff but also by other people who have not had the possibility to work from home and therefore have been forced to have contact with others through the exercise of their profession (e.g., teachers, employees in retail trade) (Nabe-Nielsen et al., 2021), differed in the amount of physical contact they have had with other people. While for example doctors, especially on COVID wards, have had frequent and intensive contact with COVID-19 patients and therefore have been at high risk of becoming infected, retail workers also have stayed physically in touch with others, but to a lesser extent and at a lower risk of contracting the COVID-19 virus. It is known that the contact with others already during previous pandemics was associated with an increased fear of an infection (Goulia et al., 2010). The fear of an infection, in turn, can have a negative impact on affect (Pérez-Fuentes et al., 2020). Therefore, in this study the amount of physical contact with others is seen as a new job stressor caused by COVID-19 which has the potential to lead to negative affect through the fear of an infection.

Not only working conditions changed, but also social relationships have suffered from the pandemic and its consequences. According to Deci's and Ryan's self-determination theory (2000), people need to fulfil three basic psychological needs to stay mentally healthy: namely, the need for autonomy, competence and relatedness. Due to the taken measures to combat the virus, people were encouraged to reduce their social contacts to an absolute minimum, which made it difficult to satisfy the need for relatedness. During lockdowns, people were suddenly only allowed to leave the house to go on errands to satisfy their basic needs, for medical

reasons, and to go to work, if not otherwise possible. Frontline employees were among those who have had to continue working without the possibility of a working from home and therefore were exposed to an increased risk of an infection. At the same time, they still have had the opportunity to maintain personal contacts due to the exercise of their profession. Accordingly, they have not been dependent on information communication technologies to stay in touch with others, like the majority of humanity, but have been able to maintain personal contacts. From previous research, it is known that face-to-face contacts support social connectedness and avoid social isolation (Ahn & Shin, 2013), and further have the power to satisfy the need for relatedness. This results in the assumption that physical contact with others fosters social connectedness and subsequently leads to positive affect.

Due to the interest in exploring physical contact as a threat and a resource in times of COVID-19 and its relation to affect, well-being becomes a focus of attention, which leads to further investigation of the happy-productive worker hypothesis (Staw et al., 1994; Zelenski et al., 2008).

According to the happy-productive worker hypothesis, happy individuals show a higher job performance than those who are unhappy (Staw et al., 1994; Zelenski et al., 2008). Subjective well-being follows the hedonic paradigm, which focuses on happiness or pleasure (Kahneman et al., 1999) and includes positive affect, low levels of negative affect and satisfaction with specific life domains and with life as a whole (Diener, 2000). Job performance is a multidimensional construct and is characterized by goal-oriented organizational behavior (e.g., van Veldhoven & Peccei, 2015; Wildman et al., 2011.; Ford et al., 2011, Viswesvaran & Ones, 2000). Koopmans et al. (2011) distinguish the following dimensions of job performance: task performance, contextual performance, adaptive performance and counterproductive work behavior. Since the findings regarding the relationship between well-being and job performance are inconsistent, the aim of the study is to explore the happy-productive worker hypothesis and eliminate inconsistencies. Motivation to investigate the happy-productive worker hypothesis grew not only because of inconsistent results, but also because of reports of increased negative affect as a result of the pandemic and the associated changes in working conditions (Lai et al., 2020; Phie, Budimir & Humer, et al., 2020; Phie, Budimir & Probst, 2020).

Next to well-being in general, work-related well-being in terms of work engagement is included in the research model. Work engagement is known as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli et al., 2002, p. 74) and follows the hedonic as well as the eudaimonic perspective of well-being

(Sonnentag, 2015). The eudaimonic paradigm goes beyond the feeling of happiness and focuses on the actualization of human potentials (Waterman, 1993). Bakker and Demerouti (2008) defined within their job-demands resources model of work engagement personal and job resources as main predictors of work engagement. Work engagement, in turn, influences job performance positively. Since the present study is all about well-being and especially about negative and positive affect, it is a concern to examine affect as a predictor of work engagement. Moreover, work engagement opens up the possibility of examining the happy-productive worker hypothesis from the perspective of work-related well-being. To sum up, in this model work engagement acts as a mediator in the relationship between affect and job performance. This concludes the research model.

Based on all these considerations, the following research question emerged:

Which impact does affect have on work engagement and job performance for frontline workers with different amount of physical contact with others in times of the COVID-19 pandemic?

Work in Times of COVID-19

The COVID-19 pandemic has caused immense changes in the world of work. It has not only had an impact on economy but also has led to enormous psychosocial consequences in Austria and worldwide (Eurofund, 2020; Korunka et al., 2020). Workers have been confronted with a dramatic increase of workload in system-maintaining jobs, short-time work in many companies, insolvencies, job loss, and working from home (Korunka et al., 2020). Every occupational group has had its own challenges to deal with while working. In the following, the first part of the research model will be described. After explaining already existing job demands and job stressors, and their effects on human well-being and work, job stressors that have arisen due to COVID-19-related changes will be discussed. Special attention is paid to the consequences for people who are forced to have contact with others because of their profession in times where physical contact should be avoided.

Job Demands and Job Stressors in General and Their Impact on Human Well-Being and Work

Research on job demands and their impact on occupational health has rapidly grown in the past decades. There is a lot of knowledge about which and how psychosocial factors at work influence employee well-being and the perception of job stress, as well as job-related behavior at an organizational level (Bakker & Demerouti, 2018). Occupational well-being is

not only an essential determinant of human functioning but also plays a crucial role regarding to job performance (De Neve et al., 2013).

According to the job demands-resources (JD-R) model (Bakker & Demerouti, 2014; 2017; Demerouti et al., 2001) there are two main categories of job characteristics, which can be generalized across all occupations: job demands and job resources. Whereas job demands, like workload, complex tasks, and conflicts are aspects of work that cost energy, job resources support individuals in achieving their goals and dealing with stressful situations. Job resources, like performance feedback, social support, and skill variety do not only represent motivating aspects in the work environment but are also important for the satisfaction of the basic psychological needs for competence, relatedness, and autonomy (Deci & Ryan, 1985).

Job Stressors. Sonnentag & Frese (2012) differ various job stressors as demanding aspects of work which evoke strain (Kahn & Byosiere, 1992) and have a negative impact on employee health and well-being (De Witte et al., 2015):

- Physical stressors (e.g., noise, dirt, heat, poor ergonomic conditions)
- Task-related job stressors (e.g., high time pressure, work overload, monotonous work, interruptions)
- Role stressors (e.g., role overload, role conflict, role ambiguity)
- Social stressors (e.g., poor social interactions, interpersonal conflicts, mobbing, (sexual) harassment)
- Work schedule-related stressors (e.g., night and shift work, long working hours, overtime)
- Career-related stressors (e.g., job insecurity, underemployment, poor career opportunities)
- Traumatic events (e.g., exposure to disasters, major accidents, extremely dangerous activities)
- Stressful change processes (e.g., downsizing, implementation of new technologies)

According to Lazarus' & Folkman's (1984) transactional stress model stressors can be distinguished with regard to their appraisal. Individuals can evaluate a job stressor as a threat or a challenge. Based on this model, researchers assume that a distinction can be made between challenge and hindrance stressors (Cavanaugh et al., 2000; LePine et al., 2005). Both types of stressors have a negative impact on health and well-being, but they can be differentiated in terms of their influence on job performance. Whereas hindrance stressors are able to cause an impairment of the performance, challenge stressors are able to increase the job performance (Sonnentag & Frese, 2012).

Employees can respond to job stressors on different levels and within different time frames. Stress reactions can occur on a physical, affective, and behavioral level. Furthermore, individuals can react immediately (short-time reactions) after the confrontation with the job stressor or with a time delay (long-term reactions).

In the short term, job stressors can lead to *physiological reactions*, like increased blood pressure (Schwartz et al., 1996), higher levels of cholesterol (Vrijkotte et al., 1999), and increased cortisol levels (Kudielka et al., 2009). Repeated sensations of these physiological reactions can lead to the development of physical illness in the long term (Sonnentag & Frese, 2012). People who are repeatedly exposed to job stressors are more susceptible to the development of cardiovascular problems (Schnall et al., 1994) or musculoskeletal diseases (Bongers et al., 1993), as well as headaches, eye strain and gastrointestinal problems (Nixon et al., 2011).

At an *affective* level stress reactions include mood disturbances, especially higher levels of negative affect, in the short run (Rodell & Judge, 2009; Zohar, 1999). In the long term, the experience of job stressors is related to a higher level of depressive symptoms (Schonfeld, 1992), psychosomatic complaints (Frese, 1985; Parkes et al., 1994), burnout (Maslach & Jackson, 1981), and other distress symptoms (Leitner & Resch, 2005).

In addition to physiological and affective responses, *behavioral reactions* can be the result of job stressors. Research shows that experiencing stressful situations can be associated with reduced attention and working memory capacity and subsequently with lower levels of performance accuracy (Nieuwenhuys & Oudejans, 2010; Searle et al., 1999). However, caution should be exercised when interpreting a reduced job performance as a result of job stressors, as not every stressor necessarily leads to a lower performance (LePine et al., 2005). Common behavioral stress reactions are violence (Chen & Spector, 1992), unsafe behaviors, accidents and injuries (Nahrgang et al., 2011), reduced organizational commitment, and increased turnover intentions, as well as actual turnover (Fried et al., 2008; Meyer et al., 2002; Podsakoff et al., 2007).

New Job Demands for Different Working Models Caused by COVID-19 Pandemic

Due to the COVID-19 pandemic and the related impact on the world of work new job demands came up. As mentioned above, workers have suddenly been confronted with an extensive rise of workload in system-maintaining professions, working from home, short-time work, insolvencies, and job loss (Korunka et al., 2020). In the following section work-related developments and the associated challenges and consequences for workers relevant to the topic will be discussed.

Working from home. While ones had to work at home from one moment to the next, others in system-maintaining jobs have been confronted with longer working hours and other burdens. At first sight it seems that employees who were forced to work from home only have advantages due to the new work environment. Indeed, Guérot et al. (2020) could show that the overwhelming majority of the respondents of their study “Home Office in der COVID-19 Krise” report a high quality of working life, including subjective productivity and well-being. Furthermore, individuals working from home are less exposed to the risk of becoming infected with the coronavirus than frontline workers (Rudolph et al., 2020). But also, disadvantages could be found. Individuals working from home reported that the ergonomic equipment was unsatisfactory, and work-life-balance suffered. Furthermore, the boundaries of work and nonwork tend to blur while working from home. In families with school-age children, home suddenly was not only a place for leisure and family time anymore but has become office and school room as well. These circumstances have the potential to lead to work-family conflicts (Sinclair et al., 2020). Apart from this, there is evidence that teleworking results in feelings of social isolation and loneliness (e.g., Mann et al, 2000; Hislop et al., 2015; Whittle & Müller, 2009) because of the missing opportunity to interact with colleagues face-to-face (e.g., Mann & Holdsworth, 2003; Hislop et al., 2015; McNaughton et al., 2014). Other disadvantages, when working from home can be longer working hours, lack of support, and less sick leave (Mann et al., 2000).

Short-Time Work. Next to working from home, short-time work has been another frequently used working model in times of COVID-19. In Austria short-time work means that due to economic difficulties a temporary reduction of normal working hours and wages is allowed. The aim of this working model is temporary reducing labour costs for companies, keeping employees (Bundesministerium für Finanzen, n.d.), and furthermore slowing down the growth of unemployment (Eurofund, 2021). The idea of short-time work is a good one as the reduction of working hours gives individuals more time for family and leisure (Kuhn et al., 2021) and saves workers from unemployment. Nevertheless, disadvantages in relation to this working model should also be mentioned. Working fewer hours is not only associated with increased family and leisure time, but also with lower earnings (Konle-Seidl, 2020). Furthermore, individuals’ fear of unemployment is greater if working short-time compared to those whose type of employment does not change (Möhring et al., 2020). Research shows that the resulting economic hardship has a negative impact on the satisfaction with family life (e.g., Conger et al., 2010; Kornirch & Eger, 2016). Especially families with children suffer from a lower income and the perceived job insecurity (Blom et al., 2017). Previous research

could also show that job insecurity can be seen as a job stressor which leads to negative outcomes (Ashford et al., 1989). It is not only the satisfaction with family life that is negatively affected but also health and well-being. Studies showed that mental well-being and physical health suffer from job insecurity in general (e.g., anxiety, high blood pressure) as well as in a work-related context (e.g., reduced job satisfaction, absenteeism, lower job performance) (e.g., De Witte, 2005; Ferrie, 2001; Probst, 2008; Shin et al., 2019; Sverke & Hellgren, 2002).

System-Maintaining Jobs. Whereas employees who have been working short-time had to reduce their working hours, individuals in system-maintaining jobs were confronted with longer working hours and other demands. Especially emergency workers and other people working in the health sector have been exposed to enormous stresses since the beginning of the crisis (Korunka et al., 2020). Healthcare workers have had to deal with long working days in safety clothes, the fear to infect themselves and others, strains in connection with intensified shift work, general role conflicts, information uncertainty, ambiguities related to instructions and leadership interventions (Smith, 2020), and the not to be underestimated factor of moral injury (Sasangohar et al., 2020). These and further factors have the dangerous potential to evoke strain and subsequently can have problematic consequences in the long term (Korunka et al., 2020). Research could show that individuals working in the health sector show especially high stress levels (anxiety, depression, insomnia, distress) (Lai et al., 2020). Furthermore, there is evidence that workers who had high levels of exposure to infected individuals reported higher stress levels, increased post-traumatic stress symptoms, and a higher consumption of alcohol than those who had not to work in high-risk units (Brooks et al., 2018; Lai et al., 2020). Not only workers in the health sector, but also individuals working in retail trade and other system-maintaining jobs have been confronted with intense contact with others and subsequently with the danger of becoming infected with the SARS-CoV-2 virus. The possibility of infections will lead to a higher strain in the medium term (Korunka et al., 2020).

The interest of this study is to investigate the effects of physical contact with others in times of COVID-19 on well-being and subsequently on job performance. Therefore, in the next section, mechanisms related to physical contact with others and well-being will be explained. This is intended to refer to persons who are compelled to have contact with other persons because of the exercise of their profession.

Physical Contact in Times of COVID-19 as a Threat

Physical Contact and Fear of Infection. On the one hand, physical contact with others while working in times of COVID-19 can be seen as a threat because of the risk of an infection and therefore acts as a job stressor which can have negative effects on human's well-being, health, and job performance. In this case, physical contact refers to people who are forced to have physical contact due to the exercise of their profession, also known as frontline workers (Nabe-Nielsen et al., 2021). Personal contact with other persons without direct physical touching also counts as physical contact here. This includes for example individuals working in the health care sector (e.g., doctors, nurses, therapists), in retail trade, in the education sector (e.g., teachers), but also body-related service providers (e.g., hairdresser, cosmeticians). To sum up, this concerns every person who has not been able to work from home and therefore had to stay physically in touch with others.

In relation to physical contact with others in times of the COVID-19 crisis, the fear of contracting the virus plays a crucial role. The fear of an infection includes not only the fear of infecting oneself, but also the fear of transmitting the virus to others. Literature shows that during the influenza A/H1N1 pandemic in 2009 frontline employees shared worries about the pandemic (Goulia et al., 2010). Current research in relation to COVID-19 pandemic shows that frontline employees show high levels of the fear of an infection too. Fear of infection levels as well as fear of transmission levels differ between different groups of frontline workers partly dependent on different risk management (Nabe-Nielsen et al., 2021). Individuals working in system-maintaining professions have in common that they have some degree of contact with other people while working. Since differing risk management does not completely explain the fear of an infection, it can be assumed that the amount of physical contact with others while working can have an impact too. Due to the missing literature about physical contact as a new job stressor in times of a pandemic where physical contact with others should be avoided, the interest of the study is to investigate the impact of the amount of physical contact of systematically relevant workers on the fear of an infection. Thus, the first hypothesis is:

Hypothesis 1: High amount of physical contact with others during occupation increases the fear of an infection.

Not only forced physical contact with others due to the exercise of the profession but also COVID-19 in general acts as a stressor and leads to anxiety (Cao et al., 2020; Wang et al., 2020; Xiang et al., 2020). Malesza and Kaczmarek (2021) could show that women, the

elderly and the chronically ill were more anxious. In addition, being married or cohabiting, and having children is related to higher levels of anxiety too. Concerning COVID-19 related factors,

higher frequency of recommended protective behaviors, greater perceived risk of infection, greater likelihood of contacting COVID-19 during the current outbreak, greater amounts of information about COVID-19 received from various sources, and very little or lack of belief that degree of catching COVID-19 depends on one's own behavior predicted greater anxiety among individuals (p. 1).

In this study the perceived risk of an infection at the workplace is of interest. Due to the findings from previous research and in relation to hypothesis one, it is suggested that the perceived risk of an infection at the workplace has an impact on the relationship between the amount of physical contact and the fear of an infection. Meaning that the higher the perceived risk of an infection the higher the fear of an infection for workers with physical contact. This results in the next hypothesis:

Hypothesis 1a: High amount of physical contact with others during occupation increases the fear of an infection moderated by perceived risk of an infection.

Furthermore, since the beginning of the COVID-19 pandemic, researchers worked on the development of vaccines to fight the virus. In Austria in December 2020 the first vaccination was administered. The survey for this study was planned to take place in May 2021. By the end of April 2021, 3.262.546 vaccinations had already been administered (Bundesministerium für Soziales, Gesundheit, Pflege und Konsumentenschutz, n.d.). Research could show that the fear of an infection and COVID-19-related anxiety were positively related to vaccine acceptance (Bendau et al., 2021). This leads to the assumption that the fear of an infection decreases in vaccinated persons. Due to the findings from Bendau et al. (2021) and the growing vaccination progress, it is believed that being vaccinated is negatively related to the fear of an infection for individuals having physical contact while working. From this follows the next hypothesis:

Hypothesis 1b: Being vaccinated buffers the relationship between physical contact with others during occupation and the fear of an infection.

Fear of Infection and Negative Affect. In the present study it is not only assumed that the amount of physical contact is positively related with the fear of an infection but also that the fear of an infection, in turn, shows a positive correlation with negative affect. Pérez-Fuentes et al. (2020) could show that the perception of threat from COVID-19 is negatively

related to positive affect and positively related to negative affect. Furthermore, they found a positive relationship between the perceived threat and negative moods like sadness-depression, anxiety, and anger-hostility. In their study, the perception of threat includes the perceived susceptibility and the perceived severity. Perceived susceptibility is understood as the belief in the vulnerability and the possibility of infecting oneself. Perceived severity describes the impact that having the disease can have on all areas of life (Kan & Zhang, 2018).

Taylor et al. (2020) identified five factors of COVID-related stress and anxiety symptoms: danger and contamination fears, fears about economic consequences, xenophobia, compulsive checking and reassurance seeking, and traumatic stress symptoms about COVID-19. The present study refers to danger and contamination fears. As job stressors negatively influence human well-being and health (De Witte et al., 2015) and physical contact with others at the workplace and the related fear of infecting oneself and others act as new stressors at work in times of COVID-19, the next hypothesis is about the positive relationship of the fear of an infection and negative affect:

Hypothesis 2: The fear of an infection is positively related to negative affect.

Physical Contact in Times of COVID-19 as a Resource

Physical Contact and Social Connectedness. On the other hand, having physical contact can be seen as a resource, as we know that human beings are socially orientated and need social relationships to remain mentally healthy (Maslow, 1943; Deci & Ryan, 2000; Baumeister & Leary, 1995). Already Maslow (1943) described the need for love, affection, and belongingness as one of five basic needs in his pyramid of needs. Individuals in this state of need satisfaction strive for relationships with people to find a place in a group. According to Deci's and Ryan's self-determination theory (SDT) (2000), the need for competence, relatedness, and autonomy "specify innate psychological nutrients that are essential for ongoing psychological growth, integrity, and well-being" (p. 229). Neglecting these needs can have significant negative consequences for human's health and well-being. The present study focuses particularly on the need for relatedness, since due to COVID-19 social life changed rapidly and the satisfaction of the need for relatedness has been suffering from it. The need for relatedness is expressed in the desire to feel connected with others (Baumeister & Leary, 1995).

Social connectedness means that human beings are subjectively aware of being in a close relationship with their social world (Lee & Robbins, 1998) and is associated with social

interactions meaning daily communication activities (e.g., saying hello, learning to communicate, pleasing others) (Laato et al., 2020). In times of COVID-19, people were forced to stay at home and face-to-face communication has been replaced by information communication technologies to stay in contact. Accordingly, opportunities for face-to-face social interactions reduced dramatically. During lockdowns individuals were only allowed to leave the house to ensure the satisfaction of basic needs and to go to work, if not otherwise possible. Therefore, only frontline employees who could not work from home were able to stay in touch with others physically. Individuals who used telework were confronted with information communication technologies to communicate with colleagues and managers while working. Literature says that the use of communication technologies may support the feeling of connectedness but is not able to avoid social isolation. Face-to-face communication is able to do both (Ahn & Shin, 2013). Lundberg and Lindfors (2002) could show that working in the office is related to higher levels of social interaction (e.g., more meetings and discussions) compared to working from home. According to this finding, it is assumed that not only office workers but also people in other professions who have regular contact with colleagues enjoy a high level of social interaction. Since systemically relevant workers, such as nurses, grocery salespersons, etc., have not had the possibility to work from home during the pandemic, they have had the opportunity to maintain face-to-face contact with other people. Therefore, personal contact with others during the peak phase of the pandemic might be seen as a resource which has the potential to foster social connectedness and avoid social isolation (Ahn & Shin, 2013). Therefore, hypothesis three is:

Hypothesis 3: High amount of physical contact during occupation increases the feeling of being socially connected.

Social Connectedness and Positive Affect. Feeling connected to others contributes to the satisfaction of the need for relatedness and therefore has a positive impact on mental health and well-being (Deci & Ryan, 2000). Social connections help individuals dealing with negative emotions (Cohen & Syme, 1985; Zaki & Williams, 2013). The COVID-19 pandemic and the measures taken to combat the virus changed people's typical social lives and were associated with high uncertainty and distress. Therefore, in these uncertain times feeling socially connected can act as a resource as higher levels of social connectedness with others are related to lower levels of perceived stress, worries, and fatigue (Nitschke et al., 2021). Furthermore, researchers could show that employees with high levels of positive social interactions show greater work engagement and positive affect (Dimotakis et al., 2011; Kühnel et al., 2012; Xanthopoulou et al., 2012). Since social connectedness is critical for

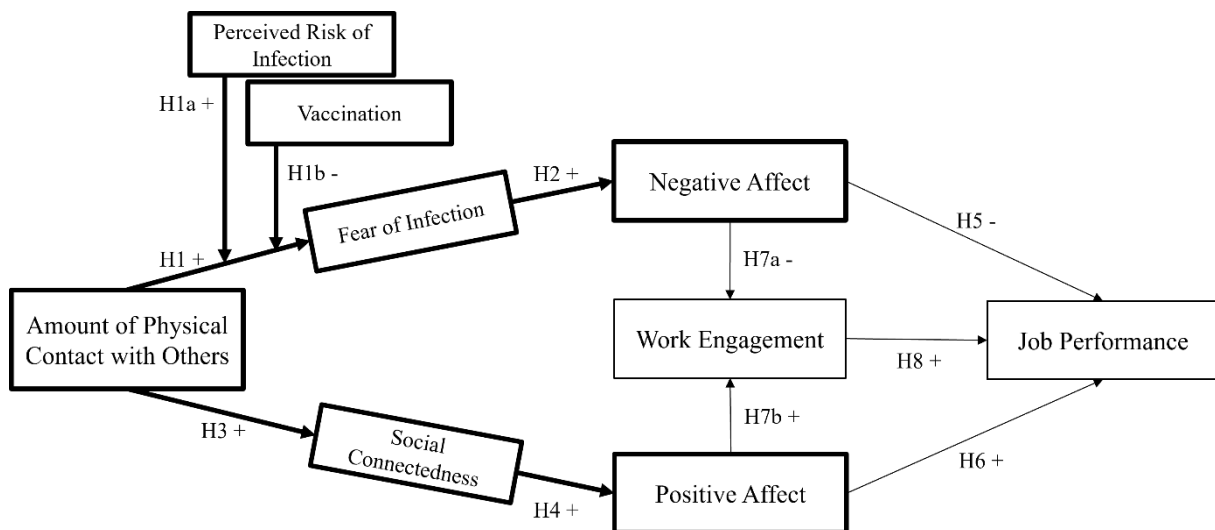
protection and promotion of mental health (Perkins et al., 2015), it is believed that social connectedness shows positive relationships with positive affect. As mentioned above, frontline employees were forced to have physical contact while working and subsequently were able to keep in touch with colleagues, clients, patients, and others. Therefore, it is assumed that they are feeling more socially connected than those working from home and furthermore show positive affect due to the greater social connectedness. This leads to the following hypothesis:

Hypothesis 4: Social connectedness is positively related to positive affect.

To sum up, Figure 1 highlights the expected relationships and their directions discussed so far.

Figure 1

Theoretical Research Model – Part 1



Note. This model (1) demonstrates the theoretical model as a whole, (2) highlights the associations between the amount of physical contact with others (perceived as a threat), fear of infection and negative affect as well as between the amount of physical contact (perceived as a resource), social connectedness and positive affect, and (3) shows the moderating effects of the perceived risk of an infection and vaccination on the correlation between the amount of physical contact and fear of infection.

Mental Health, Work Engagement and Job Performance

The first part of the model of the present study is about physical contact while working in times of the COVID-19 pandemic and the perception of it as a threat or a resource. The second part of the model subsequently is about the impact of negative as well as positive affect on job performance and work engagement and thus tries to confirm already consisting findings of this relations.

In the following, for the better understanding of the terms used within the second part of the model, definitions are explained before the interrelationships of the constructs are discussed in more detail.

Mental Health and Well-Being

Probably the best-known definition of mental health comes from the World Health Organization (2001, as cited in World Health Organization, 2004, p. 10):

Mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community (p. 1).

Galderisi et al. (2015) tried to go beyond this and other definitions and described mental health as

a dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with universal values of society. Basic cognitive and social skills; ability to recognize, express and modulate one's own emotions, as well as empathize with others; flexibility and ability to cope with adverse life events and function in social roles; and harmonious relationship between body and mind represent important components of mental health which contribute, to varying degrees, to the state of internal equilibrium (pp. 231 – 232).

Reading the definition of Galderisi et al. (2015) shows the complexity of the concept of mental health which should not be neglected. Nevertheless, this paper focuses particularly on human's well-being as an important component of mental health.

Different Types of Well-Being. Not only mental health but also well-being itself is a wide-ranging concept. It refers to the “optimal psychological functioning and experience” (Ryan & Deci, 2001, p. 142). Well-being research is oriented towards two different philosophical perspectives and paradigms: hedonism (Kahneman et al., 1999) and eudaimonism (Waterman, 1993). Following the hedonic tradition, well-being focuses on pleasure or happiness. According to the eudaimonic view, well-being goes beyond the feeling of happiness and regards to the actualization of human potentials.

Research in the past decades identified different types of well-being. According to the complete state model of mental health (Keyes & Lopez, 2002) mentally healthy people show high levels of emotional, psychological and social well-being. The definition of emotional well-being in Keyes' and Lopez' (2002) paper is similar to the definition of subjective well-being according to Diener (2000). To avoid misunderstandings, only the term subjective well-being is used in the present paper. Following the hedonic tradition, *subjective well-being*,

understood as “people's cognitive and affective evaluations of their lives” (Diener, 2000, p. 34), includes positive affect, low levels of negative affect, life satisfaction, and satisfaction with important life domains. Meaning that individuals with high levels of subjective well-being experience many pleasant and few unpleasant emotions and moods, and rate their life as a whole and in important domains as satisfactory.

While subjective well-being can be assigned to the hedonic view of well-being, psychological and social well-being take up the eudaimonic tradition. Taken together different definitions of positive psychological functioning (e.g., Maslow, 1968; Rogers, 1961; Jung, 1933; Allport, 1961; Erikson, 1959; Bühler, 1935; Neugarten, 1968; Jahoda, 1958), Ryff (1989) defined and empirically confirmed the following six dimensions of *psychological well-being*: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. While psychological well-being focuses on the evaluation of one's functioning, *social well-being* describes the evaluation of life function in a public and social way. Therefore, Keyes (1998) defined social acceptance, social actualization, social contribution, social coherence, and social integration as the five dimensions of social well-being. In sum, the quintessence of eudaimonic and hedonic well-being “is the subjective experience of feeling good and/or feeling authentic and meaningful in one's life” (Sonnentag, 2015, p. 263).

The present study focuses on subjective well-being, especially on positive and negative affect, and on work-related well-being in terms of work engagement, which will be discussed in the following section.

Work Engagement as Work-Related Well-being. Work-related well-being takes up the hedonic as well the eudaimonic tradition of well-being (Sonnentag, 2015). While the hedonic view focuses on affective and psychosomatic well-being at work (Fisher, 2010; Nixon et al., 2011), the eudaimonic perspective represents meaning (Rosso et al., 2010), or growth at work (Sonenshein et al., 2013). In recent years, work engagement has received special attention as a form of work-related well-being. According to the first definition of work engagement (Kahn, 1990), engaged individuals invest high levels of physical, cognitive, and emotional energy at work. Schaufeli et al. (2002) adapted Kahn's (1990) definition and described work engagement as

as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption. Rather than a momentary and specific state, engagement refers to a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior. Vigor is characterized by high

levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. Dedication refers to being strongly involved in one's work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption, is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work (Schaufeli & Bakker, 2004, pp. 4 – 5).

Therefore, people who feel engaged in their work show high levels of energy and strong identification with their work. While Maslach and Leiter (1997) proposed that work engagement characterized by energy, involvement, and efficacy can be understood as the opposite of burnout on a continuum of work-related well-being, Schaufeli et al. (2002) assumed that burnout and work engagement are two different constructs which should be considered independently. The present study is oriented on Schaufeli's et al. (2002) perspective of work engagement.

Job Performance

Job performance is defined as a behavior that helps an organization to reach its goals and stay or rather become effective and competitive on the labour market (e.g., van Veldhoven & Peccei, 2015; Wildman et al., 2011; Ford et al., 2011; Viswesvaran & Ones, 2000).

Types of Job Performance. Due to the multidimensionality of the global construct of job performance, different types of job performance can be distinguished. Koopmans et al. (2011) proposed a heuristic conceptual framework of individual work performance which, after a systematic review, included task performance, contextual performance, adaptive performance, and counterproductive work behavior. Proactive performance, as self-starting, future-oriented behavior, which leads to change of work situations, work roles, and employees themselves (Griffin et al., 2007), and creative performance, as the creation of novel and useful ideas, procedures, and products (Fluegge, 2009), were suggested to be separate dimensions of individual work performance too. Nevertheless, Koopmans et al. (2011) did not include these two types of job performance in their conceptual framework. Rather, they assigned proactive and creative job performance to contextual performance, because of their positive impact on the organizational, social, and psychological work environment.

Task performance focuses on behaviors that contribute to carrying out role activities and help the organization to stay or rather become productive and subsequently to achieve organizational goals. Task performance in some contexts is also called in-role performance or

proficiency (e.g., Borman & Motowidlo, 1993; Campbell, 1990; Koopmans et al., 2011). *Contextual performance*, also referred to as extra-role performance, prosocial activity, or organizational citizenship behavior, contributes to the improvement of the organizational environment and the achievement of organizational objectives. Through helping colleagues, defending the team and the organization, and taking on additional tasks, contextual performance is more than completing formally prescribed tasks. Such behaviors can support the organizational, social, and psychological work environment (e.g., Borman & Motowidlo, 1993; Organ, 1997; Viswesvaran & Ones, 2000; Koopmans et al., 2011). *Adaptive job performance* refers to being able to adopt behavior in terms of changing situations and new job demands at work (Allworth & Hesketh, 1999; Pulakos et al., 2000). *Counterproductive job performance*, also known as counterproductive work behavior, has a negative impact on organizational goals and interests due to behaviors that disrupt organizational well-being. Well-being undermining behaviors can be theft, bullying, and off-task behavior (e.g., Hollinger, 1986; Rotundo & Sackett, 2002; Koopmans et al., 2011).

As the diversity of types of job performance should not be ignored, the present study focuses not only on the global construct of job performance, but on both task and contextual performance as well as counterproductive performance.

The Happy-Productive Worker Hypothesis

Affect and Job Performance

As knowledge about the relationship between well-being and job performance has crucial influence on organizational management and strategies, the interest in investigating this relationship has been growing rapidly in the last decades (Zelenski et al., 2008). This movement had its beginnings as early as the 1930s (Pennock, 1930). Already Hersey (1932) postulated that individuals are more productive in a positive state than in a negative one. From this and further studies, the happy-productive worker hypothesis emerged. It says that happy workers show higher levels of productivity than those who are unhappy (Staw et al., 1994; Zelenski et al., 2008). Due to the lack of a universal definition of happiness, researchers disagree about its meaning. According to Zelenski et al. (2008), in the present paper happiness will be defined as subjective well-being including emotional experience (positive and negative affect), life satisfaction, and domain satisfactions (e.g., job satisfaction) (Diener, 2006; Kim-Prieto et al., 2005).

Findings in terms of the relationship between happiness and job performance are inconsistent. On the one side, studies in the past showed evidence for the happy-productive

worker hypothesis. Researchers reported a positive relationship between psychological well-being, positive affect, life satisfaction, and overall job performance (e.g., Sonnentag, 2015; van Veldhoven & Peccei, 2015), showing that hedonic as well as eudaimonic well-being play an important role in terms of productivity. According to the different dimensions of job performance, research says that high levels of well-being correlate with an increased level of task effort (Foo et al., 2009; Seo et al., 2010) and higher levels of task performance (Seo & Ilies, 2009; Zelenski et al., 2008). Further, when negative affect (Seo & Ilies, 2009) and exhaustion are high (Halbesleben & Wheeler, 2011) individuals show a poorer job performance. Negative affect shows associations to lower psychosocial well-being like depressive symptoms (Denollet & De Vries, 2006) and is related to productivity loss due to presenteeism (Hemp, 2004). Concerning contextual performance, also known as organizational citizenship behavior, researchers reported correlations between positive affect and organizational citizenship behavior in general (Ilies et al., 2006; Spence et al, 2011). Further, Spence et al. (2014) could show that not only overall organizational citizenship behavior but also organizational citizenship behavior directed toward supervisors, colleagues and the organization are related to positive affect.

On the other side, Gutiérrez et al. (2020) recently conducted a meta-analysis in terms of the happy-productive worker hypothesis and showed that out of 108 possibilities only 23 relationships between types of well-being and job performance could be confirmed. For example, in terms of organizational citizenship behavior, researchers found no relationship with negative affect (Dalal et al., 2009; Spence et al., 2011). Findings regarding the correlation between positive well-being and counterproductive performance are inconsistent too. Some researchers could find a negative relationship between positive affect and counterproductive work behavior (Dalal et al., 2009; Ferris et al., 2012), while others did not find a relationship at all (Judge et al., 2006; Scott & Barnes, 2011).

Other studies went a step further and examined not only the happy-productive worker hypothesis but could show that different patterns in terms of the relationship between well-being and job performance exist. Researchers were able to assign study participants to the following four patterns: happy-productive, happy-unproductive, unhappy-unproductive, and unhappy-productive (Peiró et al., 2019; Ayala et al., 2017). Actually, Peiró et al. (2019) could show that more than 50% of the participants show unhappy-productive or happy-unproductive patterns.

The interest to investigate the relationship between well-being and job performance grew due to the inconsistency of empirical evidence of the happy-productive worker

hypothesis and the reported increased negative affect due to the COVID-19 pandemic and its measures taken. As mentioned earlier, employees in system-maintaining occupations in particular are confronted with especially high job demands due to COVID-related changes in working conditions. This results in high stress levels in form of depression, anxiety, and traumatic stress (Lai et al., 2020). Furthermore, an Austrian study could show that in general individuals' levels of mental health symptoms for depression, anxiety, or sleep problems increased by a factor of three to five compared to pre-pandemic levels (Phie, Budimir, Humer, et al., 2020; Phie, Budimir & Probst, 2020). Therefore, it is assumed that due to the persistent increased psychological strain caused by the pandemic, and especially by COVID-related changes in working conditions, negative affect may be particularly high which subsequently may have an impact on the job performance. To sum up, hypotheses five and six are:

Hypothesis 5: Negative affect will be negatively related to overall job performance.

Hypothesis 6: Positive affect will be positively related to overall job performance.

Since job performance is a multidimensional construct, the aim of this study is not only to investigate the association between affect and the overall job performance but also to study the relationship between affect and the dimensions of job performance, namely task performance, contextual performance and counterproductive performance. From this follow specified hypotheses according affect and the dimensions of job performance:

Hypothesis 5a: Negative affect will be negatively related to task performance.

Hypothesis 5b: Negative affect will be negatively related to contextual performance.

Hypothesis 5c: Negative affect will be positively related to counterproductive performance.

Hypothesis 6a: Positive affect will be positively related to task performance.

Hypothesis 6b: Positive affect will be positively related to contextual performance.

Hypothesis 6c: Positive affect will be negatively related to counterproductive performance.

Work Engagement – Predictors and Consequences

Not only knowledge about the relationship between affect and job performance but also research on work engagement has important implications for human resource management (Kim et al., 2013). According to the postmodern organization development

paradigm (Watkins & Stavros, 2009), which focuses on strengths-based processes, it is believed that work engagement plays a crucial role in supporting employees' change and improving job performance (Kim et al., 2013). As written earlier, Schaufeli et al. (2002) defined work engagement as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (p. 74). A few years later Bakker and Demerouti (2008) postulated the job-demands resources model of work engagement. They assume that job resources and personal resources independently as well as combined are predictors of work engagement, especially when employees are facing high levels of job demands. Work engagement, in turn, influences job performance positively. But this is not the end of the model. Bakker and Demerouti (2008) suggest that engaged and well-performing individuals subsequently build up their own resources, which again has a positive influence on work engagement.

Affect and Work Engagement. According to the job-demands resources model of work engagement (Bakker & Demerouti, 2008), job resources like social support from colleagues and supervisors, performance feedback, skill variety, autonomy, and learning opportunity (Bakker & Demerouti, 2007; Schaufeli & Salanova, 2007) as well as personal resources, such as self-efficacy, organizational-based self-esteem, and optimism (Xanthopoulou et al., 2007) are positively related to work engagement. The present study focuses on personal resources in terms of positive affect, but also includes negative affect as a stressful component that can have a negative impact on work engagement, since it could be found that engagement and disengagement are related to employees' affective state (Schultz & Edington, 2007). Work engagement is especially dependent on affect, since engaged employees show high involvement of themselves and positive work-related feelings (Kahn, 1990; Rich et al., 2010).

On the one hand, negative affect is not compatible with high levels of work engagement, meaning that individuals in a negative affective state do not show high levels of energy while working (vigor), are not strongly involved (dedication), and feel not fully concentrated and happily engrossed in their work (absorption) (Bledow et al., 2011). Ferreira et al. (2019) could show that a negative relationship between emotional exhaustion, negative affect and work engagement exist. Thus, the next hypothesis is:

Hypothesis 7a: Negative affect will be negatively related to work engagement.

On the other hand, if employees are experiencing positive affect they show goal-oriented behaviors due to the assumption that engaging in work tasks leads to positive outcomes (Hakanen et al., 2006; Ilies & Judge, 2005). Goal-directed actions act as

preconditions of work engagement and show important associations with positive affect (Kazén et al., 2008). Therefore, the following hypothesis is formulated:

Hypothesis 7b: Positive affect will be positively related to work engagement.

Work Engagement and Job Performance. According to Bakker and Demerouti (2008), there are at least four reasons why employees who show high levels of work engagement perform better than those showing low levels of engagement while working. *First* of all, there is evidence that engaged individuals experience positive emotions while working (Schaufeli & Van Rhenen, 2006) which subsequently can have a positive impact on the job performance (Demerouti & Bakker, 2008). Happy people show higher sensitivity to opportunities at work, helpfulness towards colleagues, consciousness and optimism (Cropazano & Wright, 2001). *Second*, research found that engaged employees are healthier than non-engaged employees which may be another reason for a better job performance (Bakker & Demerouti, 2008). For example, Schaufeli and Bakker (2004) could show that individuals high in work engagement are less prone to self-reported headaches, cardiovascular problems, and stomach aches. *Third*, the ability to create own resources due to high levels of work engagement can have a positive influence on job performance too (Bakker & Demerouti, 2008). Xanthopolou et al. (2007) could show that work engagement, personal resources, and job resources have a reciprocal influence on each other which confirms an upward spiral of work engagement and resources. *Fourth*, there is evidence for the transfer of positive or negative experiences from one person to another. This phenomenon is called crossover or emotional contagion (Westman, 2001). Bakker and Demerouti (2008) assume that the crossover of engagement may also play an important role in terms of the relationship between engagement and job performance. Indeed, research could show that the communication of optimism, positive attitudes, and proactive behaviors to others supported the generation of positive team climate (Bakker et al., 2006, as cited in Bakker & Demerouti, 2008) which leads to the suggestion that employees showing high levels of work engagement infect their colleagues with their mood and, in turn, foster good performance (Bakker & Demerouti, 2008).

Especially practitioners are interested in work engagement since positive relationships between work engagement and job performance are assumed (Bakker & Demerouti, 2008). Dedication, as one aspect of work engagement, is related to an increased level of self-rated task performance over time (Akkermans et al., 2013). Daily work engagement in general was found to correlate positively with daily task performance too (Bakker & Xanthopoulou, 2009). Furthermore, research says that engaged employees show higher levels of personal

initiative at work (Hakanen et al., 2008) and higher levels of organizational citizenship behavior (Gorgievski et al., 2010; Simbula & Guglielmi, 2013).

The reported findings focus on the different dimensions of job performance in relation to work engagement. However, in this context, the aim of the present study was rather to investigate work engagement as resource related to affect and overall job performance than to differentiate between different aspects of job performance. From these results the following hypothesis:

Hypothesis 8: Work engagement will be positively related to job performance.

As written earlier, negative affect and emotional exhaustion are negatively correlated with work engagement. Furthermore, it could be shown that work engagement mediates the relationship between negative affect and job performance. Meaning that employees' productivity loss due to negative affect and emotional exhaustion decreased when the work engagement was high (Ferreira et al., 2019). To confirm this finding the next hypothesis is formulated:

Hypothesis 9a: Work engagement will mediate the relationship between negative affect and job performance.

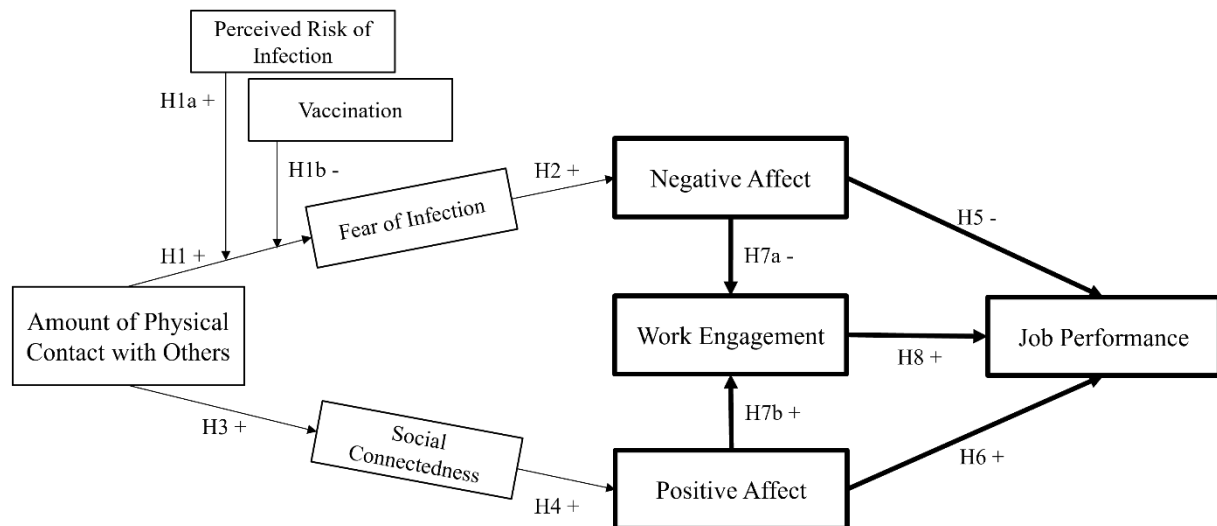
Literature shows that job performance is better predicted by work engagement and psychological well-being than by work engagement alone (Robertson et al., 2012). Since eudaimonic as well as hedonic well-being play an important role in relation to job performance (e.g., Sonnentag, 2015; van Veldhoven & Peccei, 2015), and due to the existing findings of the relationships between positive affect and work engagement (e.g., Schultz & Edington, 2007; Kahn, 1990; Rich et al., 2010; Hakanen et al., 2006; Ilies & Judge, 2005; Kazén et al., 2008) as well as work engagement and job performance (e.g., Akkermans et al., 2013; Bakker & Xanthopoulou, 2009; Hakanen et al., 2008; Gorgievski et al., 2010; Simbula & Guglielmi, 2013), it is assumed that work engagement mediates the relationship between positive affect and job performance. Apart from this, the discussion of possible reasons why engaged employees perform better than those who are not, again emphasised the importance of positive affect in relation to work engagement and its positive effect on job performance. According to this the last hypothesis is:

Hypothesis 9b: Work engagement will mediate the relationship between positive affect and job performance.

Figure 2 highlights the expected relationships between affect, work engagement, and job performance.

Figure 2

Theoretical Research Model – Part 2



Note. This model (1) demonstrates the theoretical model as a whole and (2) highlights with regard to the happy-productive worker hypothesis the relationships between affect, work engagement, and job performance.

To sum up, the overall model emerged because of the new job demands caused by the COVID-19 pandemic and the interest in the relationship between affect and job performance. The aim of the study is not only to investigate the relationships between the mentioned constructs, but also to study the path from physical contact as a job stressor or a resource to job performance, as can be seen from the direction of the arrows in Figure 2.

Method

Sample and Procedure

The data were collected from the 23rd of April until the 30th of May by an online questionnaire. The questionnaire was created using the online survey tool *SoSci Survey* (<https://www.sosicurvey.de/>). Participants were recruited mainly via snowball sampling and social media and were given access to the questionnaire by a link sent to them. When completing the questionnaire, they were asked to self-assess their own behaviors and attitudes. In total, they had to answer 76 items in German language. Participation in the study was completely voluntary. It was a cross-sectional study. Therefore, data were only collected at one measurement point. Only people who worked at least 20 hours per week and were forced to have physical contact with others because of their job were included in the data

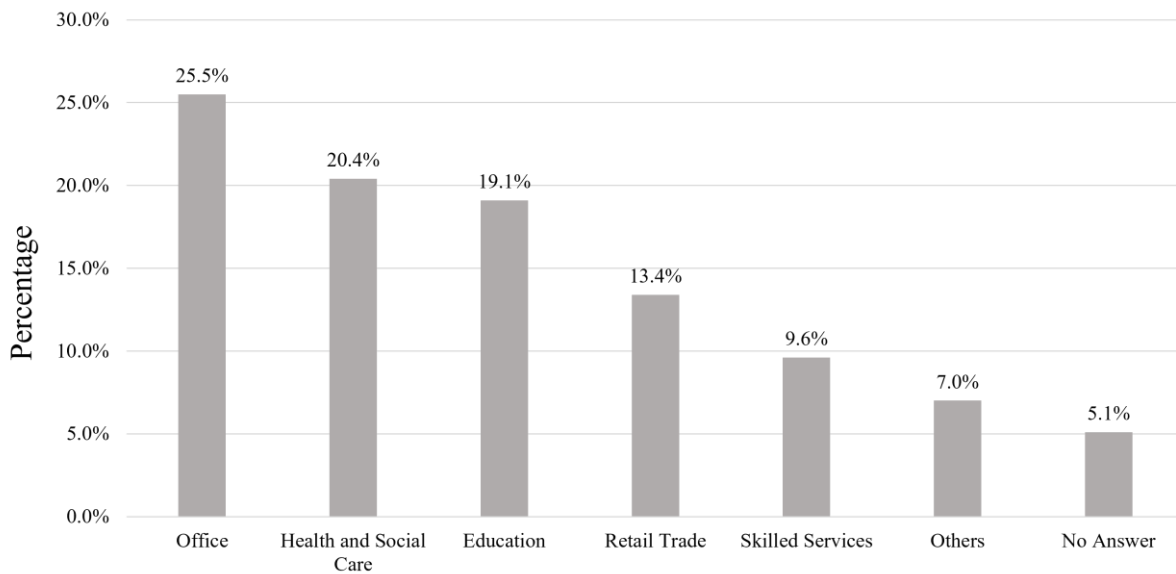
analysis. Physical contact with others was considered an inclusion criterion for participation, as the aim of the study was to examine the impact of the extent of forced physical contact with others while working on human beings during times of the COVID-19 pandemic.

Persons who did not meet the inclusion criteria were already excluded during the processing of the questionnaire.

Descriptive Statistics

After excluding unusable cases due to missing or unrealistic answers, $N = 157$ people finally remained as a sample. Out of these $N = 157$ participants of the study the majority (67.5%) was female. 31.8% were male and 0.6% of the people who took part in the study described themselves as diverse. Age was surveyed in three categories: younger than 30 years, between 30 and 45 years old and older than 45 years. Most of the participants were younger than 30 (43.9%) years. About one third (31.8%) were between 30 and 45 years old and only a quarter (24.2%) were older than 45 years. In terms of nationality, the great majority of the sample (89.8%) came from Austria. The remaining 10.2% indicated German or other nationality. About a half of the participants (47.8%) reported that they have a college or university degree, 21.7% graduated from school with a university entrance qualification (A-Levels) and 30.6% completed compulsory school or apprenticeship.

In addition to the socio-demographic variables mentioned, relevant job-specific aspects were also asked. Participants of the present study were on average full-time employees. At the time of the survey, they worked an average of $M = 38.64$ ($SD = 8.77$) hours and $M = 5.8$ ($SD = .64$) days per week. Furthermore, the occupational group and the associated profession were of particular interest. Therefore, participants were asked in which sector they work and what exactly their job is. After a review of the data collected, the occupational groups shown in Figure 3 were identified post-hoc. At 25.5%, people who worked in offices, including civil servants, clerks, commercial employees, etc., made up the largest occupational group in this study. 20.4% of the participants worked in health and social care sector. A large proportion were therapists with various specialisations, but doctors, nurses, and other medical professionals were also represented. People who worked in the education sector, such as teachers and kindergarten teachers in particular, were the third largest occupational group in this study with 19.1%. 13.4% of the participants worked in retail and 9.6% practised skilled services, like electricians and hairdressers. At the end, 7.0% could not be assigned to any occupational group and 5.1% gave no answer at all.

Figure 3*Occupational Groups*

Note. $N = 157$.

Since the main objective of the study was to investigate the influence of the degree of forced physical contact with others in times of COVID-19 on affect and subsequently on job performance, a question on whether physical contact is required due to the profession ensured that persons who did not fit into the target group were selected in advance. People who were selected were subsequently asked a question about the extent of forced physical contact with others. Out of the $N = 157$ participants, 59.9% indicated to have always physical contact with others and 27.4% indicated often. 12.8% reported that they sometimes or seldom have physical contact with other people in the course of their work. In relation to physical contact in times of COVID-19 and the associated fear of an infection, the perceived risk of contracting the coronavirus and the vaccination status were also of interest. Only 3.2% did not perceive any risk of contracting COVID-19 while doing their job. 26.1% reported a low perceived risk and 25.7% a medium risk of becoming infected. More than one third (35.1%) of the participants rated their risk of contracting COVID-19 as high or even very high. Only $n = 155$ persons answered the question on vaccination status. As vaccination status is a sensitive topic, respondents were able to skip the question. At the time of the survey, 11.0% of $n = 155$ people were already fully immunised. About one third (29.7%) had already received the first vaccination dose and the vast majority with 59.4% had not yet been vaccinated at all.

Material

In the following, all scales and corresponding sample items as well as individual items for surveying specific constructs are presented. All items were translated from English into German if no German version was available. Furthermore, the reliabilities of the original scales are mentioned before the measured reliabilities are discussed in more detail in the results section. The whole questionnaire can be found in the appendix.

Amount of Physical Contact with Others

Each participant was asked in the first instance whether they have forced/necessary physical contact with other people in the course of carrying out their profession. The question could be answered with *Yes* or *No*. If the question was answered in the negative, the questionnaire was closed for the participant. If the answer was yes, the following question was used to elicit the extent of physical contact: “How often do you have forced/necessary physical contact with other people in the course of your work?”. The question could be answered on a 4-point Likert scale (1 = *rarely*, 2 = *sometimes*, 3 = *often*, 4 = *always*).

Perceived Risk of Infection

Since the first half of the research model presented above (Figure 1) focuses on physical contact in times of COVID-19 and its impact on human beings, the question was also asked about the perceived risk of becoming infected with the coronavirus: “How high do you consider the risk of becoming infected with corona while doing your job?”. Answers could be given on a 5-point Likert scale (1 = *no risk*, 2 = *low*, 3 = *medium*, 4 = *high*, 5 = *very high*).

Vaccination Status

In relation to the previously mentioned questions, the vaccination status was also asked. The question was: “Have you already been vaccinated against the coronavirus?” and could be answered with 1 = *No*, 2 = *Yes, I have received the first partial vaccination*, 3 = *Yes, I am fully vaccinated* and 4 = *No information*.

Fear of Infection

Fear of infection was measured with the due to the COVID-19 crisis and the associated fears new developed *COVID Stress Scales* (CSS) (Taylor et al., 2020). The CSS consists of 36 items that are assigned to the five dimensions (1) danger and contamination fears, (2) fears about economic consequences, (3) xenophobia, (4) compulsive checking and reassurance seeking, and (5) traumatic stress symptoms. Since only danger and contamination

fears were considered relevant in the current study, nine appropriate items were selected from a total of twelve items in this dimension. Participants had to answer items like “I am worried that our healthcare system won’t be able to protect my loved ones” and “I am worried that if someone coughed or sneezed near me, I would catch the virus”, and rate them on a 5-point Likert scale from 1 = *not at all* to 5 = *extremely*. The reliability of the dimension COVID danger and contamination was considered excellent with a Cronbach’s α of $\alpha = .94$ for the Canadian sample and $\alpha = .95$ for the U.S. sample. In this case, no German version of the scale was available, which is why the items were translated from English into German.

Social Connectedness

Social connectedness was measured with the *revised UCLA Loneliness Scale (R-UCLA)* (Hawkley et al., 2005). The R-UCLA consists of two dimensions: social isolation and social connectedness. For the current study, only social connectedness was of interest. Out of nine items measuring this dimension, only items with a factor loading higher than .6 were chosen. Finally, this resulted in seven items. Sample items are „There are people I feel close to” or “I feel in tune with the people around me”. Participants rated the items on a 5-point Likert scale ranging from 1 = *not at all* to 5 = *totally*. Hawkley et al. (2005) conducted two studies to examine mental representations of loneliness and connectedness: one with young adults and one with older adults. In both cases, social connectedness could be divided into the dimensions relational and collective connectedness. Accordingly, the reliability for the dimensions was calculated individually. Cronbach’s α for relational connectedness was in both studies with $\alpha > .8$ high. In terms of collective connectedness, Cronbach’s α was acceptable ($\alpha = .76$ in study 2) to high ($\alpha = .85$ in study 1). The items translated into German were taken from a seminar paper by psychology students at the University of Vienna (Eppenberger et al., 2021). Eppenberger et al. (2021) calculated the reliability for the German items of social connectedness in general and were able to find a high Cronbach's α of $\alpha = .88$.

Positive and Negative Affect

Positive and negative affect were measured with the German version of the *Positive and Negative Affect Schedule (PANAS)* (Breyer & Bluemke, 2016) adapted from the widely used English version by Watson et al. (1988). In the introduction, participants were asked to read the words describing feelings and emotions and rate them in relation to the last few days. The rating scale ranged from 1 = *not at all* to 5 = *extremely*. A total of 10 items on negative affect and 10 items on positive affect had to be answered. Example words for positive affect,

which had to be assessed, are "active" and "interested", and for negative affect "distressed" and "guilty". For both dimensions the reliability was high with a Cronbach's α of $\alpha = .86$.

Work Engagement

For measuring work engagement, the short form of the *UTRECHT Work Engagement Scale* (UWES-9) (Schaufeli & Bakker, 2004) was used. The short form includes nine items. Three items each for the dimensions vigor, dedication and absorption. Example items are "At my work, I feel bursting with energy" for vigor, "I am enthusiastic about my job" for dedication, and "I feel happy when I am working intensely" for absorption. Respondents had to answer the items on a 7-point Likert scale from 1 = *never* to 7 = *always*. In the manual, versions of the UWES were made available in different languages, including German. Therefore, the German items from the manual were used in this study. Although the short version contains fewer items, the total reliabilities across all three dimensions were very high to excellent with Cronbach's α from $\alpha = .79$ (absorption) to $\alpha = .89$ (dedication).

Job Performance

Since job performance is a multidimensional construct, the dimensions task performance, contextual performance, and counterproductive work behavior were measured with the Individual Work Performance Questionnaire (IWPQ) from Koopmans et al. (2014). A total of 18 items on individual job performance had to be answered in the questionnaire. To obtain information on task performance, survey participants had to rate five items like "I managed to plan my work so that it was done on time" using a 5-point Likert scale from 1 = *seldom* to 5 = *always*. Data on contextual performance was collected with eight items. An example item is "I started new tasks myself, when my old ones were finished". The response format was the same as for task performance. Counterproductive work behavior was again surveyed with five items. On a 5-point Likert scale from 1 = *never* to 5 = *often*, participants had to rate items like "I complained about unimportant matters at work". The items of all three dimensions should be answered in relation to the last days. As no German version of the scale could be found, one of the authors (Linda Koopmans) of the IWPQ was asked for a German translation. In fact, the translated scale was provided for the use in the present study. In the course of a cross-cultural adaptation of the IWPQ from Dutch to American-English language (Koopmans et al., 2016), internal consistencies were calculated. Cronbach's α for task performance was high ($\alpha = .79$), and for contextual performance and counterproductive work behavior even excellent ($\alpha = .83$ and $\alpha = .89$).

Other

In addition to the already mentioned constructs, demographic variables like gender, age, nationality, and educational level were surveyed with self-created items. Furthermore, job-specific information was asked about the number of hours and days worked per week, as well as about the industry and the profession itself.

Data Analysis

The statistical analysis of the collected data was carried out using IBM SPSS Statistics (version 27). This included the calculation of descriptive characteristics, correlations, linear regressions, and internal consistencies. In addition, PROCESS Makro (version 3.5) by Hayes (2021) was used to conduct the moderation and mediation analyses.

Results

Reliabilities

In the first instance, the internal consistencies were calculated in the data analysis. There were several reasons for this: Firstly, there was no German version of some scales, which is why the items were translated into German. Since there was no preliminary study to check the measurement accuracy of the translated scales, it was important to calculate these reliabilities in a first step. Furthermore, in some cases not all items of a scale were used, but only those relevant for the survey were selected, which also shows the necessity of a reliability analysis. As can be seen in Table 1, Cronbach's α for all scales as well as for individual dimensions of them was high to excellent. The reliability for contextual performance as one dimension of individual work performance was the lowest one with a Cronbach's α of $\alpha = .80$. Work engagement as general construct with a Cronbach's α of $\alpha = .96$ showed the highest internal consistency.

Table 1*Scale Reliabilities*

	α	No. of Items
1. Positive Affect	.90	10
2. Negative Affect	.84	10
3. Work Engagement Total	.96	9
4. WE Vigor	.90	3
5. WE Dedication	.93	3
6. WE Absorption	.87	3
7. Overall Job Performance (Task and Contextual Performance)	.83	13
8. Task Performance	.87	5
9. Contextual Performance	.80	8
10. Counterproductive Performance	.84	5
11. Social Connectedness	.90	7
12. Fear of Infection	.87	9

Note. WE = Work Engagement.

Correlations

Before testing the hypotheses, correlations of the individual constructs of the research model were calculated. In terms of corona-related constructs, some significant relationships were found. Physical contact with others while on the job during periods of COVID-19 showed a weak but highly significant correlation only with the perceived risk of an infection ($r = .36$), all other constructs did not correlate significantly with physical contact. The perceived risk of an infection also correlated significantly weakly to moderately with being vaccinated ($r = .25$), negative affect ($r = .21$), and the fear of an infection ($r = .37$). Furthermore, the fear of an infection was significantly negatively associated with positive

affect ($r = -.18$) and showed a high significant moderate correlation with negative affect ($r = .30$). With regard to the constructs used to test the happy-productive worker hypothesis and in comparison to all the calculated correlations, positive affect and work engagement correlated significantly the highest with each other ($r = .67$). In addition to the aforementioned correlation, positive affect showed highly significant moderate positive correlations with job performance ($r = .47$) and social connectedness ($r = .36$), as well as highly significant moderate negative correlations with negative affect ($r = -.43$). Negative affect, in turn, was highly significantly negatively associated with social connectedness ($r = -.24$) and work engagement ($r = .27$). Work engagement and job performance showed a highly significant correlation too ($r = .36$), and were both significantly associated with social connectedness ($r = .28$; $r = .20$)

All correlations as well as mean values and standard deviations of the scales can be read from Table 2.

Table 2*Means & Correlations*

Variable	<i>n</i>	<i>MW (SD)</i>	1	2	3	4	5	6	7	8	9
1. Physical Contact	157	3.43 (.83)	-								
2. Perceived Risk of Infection	157	3.16 (1.06)	.36**	-							
3. Vaccination	155	1.52 (.69)	.14	.25**	-						
4. Positive Affect	157	3.39 (.74)	.15	.08	.14	-					
5. Negative Affect	157	1.79 (.57)	.10	.21**	-.02	-.43**	-				
6. Work Engagement	157	4.94 (1.29)	.06	.16*	.09	.67**	-.27**	-			
7. Job Performance	157	3.72 (.65)	.02	.11	-.02	.47**	-.16	.36**	-		
8. Social Connectedness	157	4.04 (.76)	.11	.13	.08	.36**	-.24**	.28**	.20*	-	
9. Fear of Infection	157	2.65 (.84)	.01	.37**	-.04	-.18*	.30**	-.05	.04	-.03	-

N = 157.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed).

Hypotheses Testing

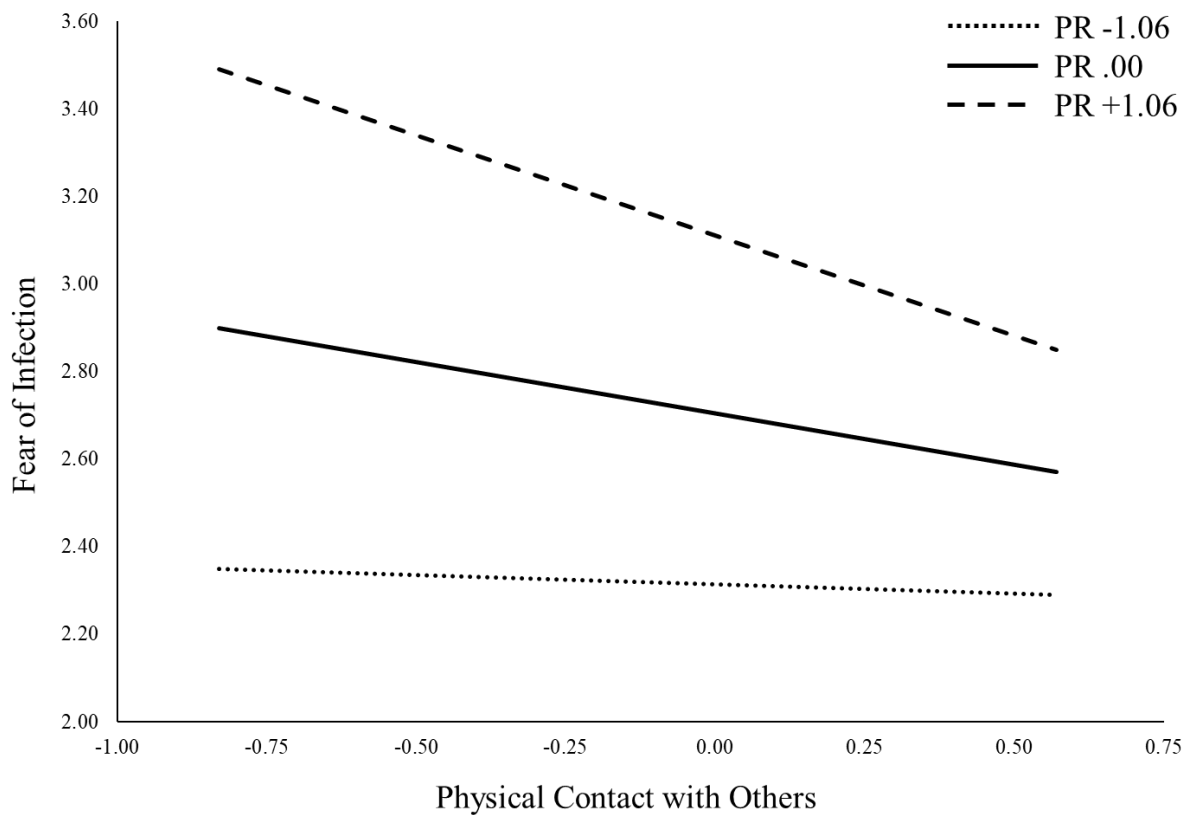
With the exception of the hypotheses 1a, 1b, 9a, and 9b, all hypotheses were tested using a linear regression model. PROCESS Macro (version 3.5) by Hayes (2021) was used to conduct the moderation analysis of hypotheses 1a and 1b and to calculate the mediation analysis of hypotheses 9a and 9b. All hypotheses, apart from those assuming moderating effects, were tested unilaterally. Accordingly, mainly one-tailed *p*-values are reported below. Two-tailed *p*-values are only given within the results report of the moderation analyses.

Hypothesis H1 addressed the impact of physical contact with others during work in times of COVID-19 on the fear of an infection. Hypotheses H1a and H1b examined this relationship in more detail with the assumption that the positive association between physical

contact and the fear of an infection is strengthened by the perceived risk of an infection (H1a) and weakened by a vaccination that has already been administered (H1b). H1 ($F(1, 155) = .00, b = .00, p = .462, R^2 = .00$) and H1b ($F(3, 151) = .01, p = .998, R^2 = .00$) could not be confirmed in any way. With regard to hypothesis 1a, significant results were achieved ($F(3, 153) = 13.26, p < .001, R^2 = .19$), but contrary to previous expectations. The results showed a significant interaction between physical contact and the perceived risk of an infection ($F(1, 153) = 5.10, p = .025, \Delta R^2 = .03$). Hypothesis 1a assumed, that individuals who have a high degree of physical contact with others during the course of their work perceive the risk of contracting an infection to be higher than those having little physical contact and therefore show a higher level of the fear of an infection. But in fact, the results showed that especially people with little extent of physical contact with others showed the highest levels of fear of an infection when the risk of an infection was perceived to be high. The fear of an infection decreased with increasing contact for those who perceived the risk of becoming infected as high (Figure 4). In addition, conditional effects of the perceived risk of an infection on the relationship of physical contact with others and the fear of an infection can be found in Table 3. Only conditional effects of medium ($b = -.25, t(154) = -2.79, p = .006$) and high ($b = -.46, t(154) = -2.97, p = .004$) levels of the perceived risk of an infection were significant.

Figure 4

Moderating Effect of the Perceived Risk of an Infection on the Correlation between Physical Contact with Others and the Fear of an Infection



Note. The variables *Physical Contact with Others* and *Perceived Risk of Infection (PR)* were centered around the mean.

Table 3

Conditional Effects of Perceived Risk of an Infection on the Relationship of Physical Contact with Others and the Fear of an Infection

	b	p	95% CI	
PR -1.06	-.05	.635	-0.24	0.15
PR .00	-.25	.006	-0.43	-0.07
PR +1.06	-.46	.004	-0.77	-0.15

Note. PR = Perceived Risk of Infection.

The second hypothesis, in turn, suggested that the fear of an infection is positively related to negative affect. Indeed, H2 could be confirmed ($F(1, 155) = 15.56$, $b = .20$, $p < .001$, $R^2 = .09$).

It was not only assumed that physical contact with others leads to the fear of an infection, but also that physical contact with others in times of COVID-19 acts as a resource

and shows positive interactions with social connectedness (H3). This hypothesis could also not be supported ($F(1, 155) = 2.02, b = .10, p = .079, R^2 = .01$). However, hypothesis 4 could be confirmed again ($F(1, 155) = 22.87, b = .35, p < .001, R^2 = .13$). H4 is about the positive relationship of social connectedness and positive affect.

The second part of the research model deals with the happy-productive worker hypothesis. Therefore, the hypotheses H5 to H9 deal with affect, work engagement and job performance.

The hypotheses 5 as well as 5a – 5c assume different relationships between negative affect, overall job performance, and the dimensions of individual job performance. According to the results, negative affect shows significant relationships with overall job performance (H5) ($F(1, 155) = 3.80, b = -.18, p = .027, R^2 = .02$), task performance (H5a) ($F(1, 155) = 16.92, b = -.44, p < .001, R^2 = .10$), and counterproductive work behavior (H5c) ($F(1, 155) = 48.12, b = .80, p < .001, R^2 = .24$). In terms of the negative relationship between negative affect and contextual performance (H5b), no significant results can be reported ($F(1, 155) = .02, b = -.02, p = .444, R^2 = .00$).

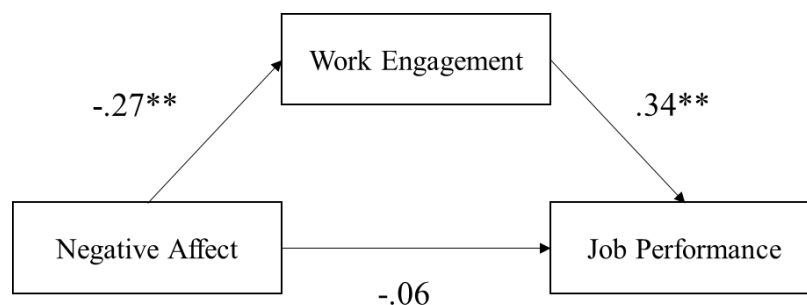
The same hypotheses, but going in the opposite direction, are put forward in relation to positive affect (H6 as well as H6a-H6c). First of all, in relation to H6, a significant relationship between positive affect and overall job performance could be found ($F(1, 155) = 43.65, b = .41, p < .001, R^2 = .22$). Furthermore, all hypothesis on positive affect and the dimensions of individual job performance also could be confirmed. Positive affect showed significant positive relationships with task performance (H6a) ($F(1, 155) = 18.66, b = .35, p < .001, R^2 = .11$) and contextual performance (H6b) ($F(1, 155) = 34.29, b = .45, p < .001, R^2 = .18$), and a significant negative relationship with counterproductive performance (H6c) ($F(1, 155) = 51.10, b = -.63, p < .001, R^2 = .25$).

Hypotheses 7a and 7b deal with the relationship between affect and work engagement. H7a assumes that negative affect is negatively related to work engagement. The results of the present study confirmed this association ($F(1, 155) = 12.44, b = -.62, p < .001, R^2 = .07$). In terms of H7b, it was suggested that positive affect will be positively associated with work engagement. Significant results were also obtained for this hypothesis ($F(1, 155) = 123.99, b = 1.16, p < .001, R^2 = .45$). Moreover, it was not only assumed that there are correlations between affect and work engagement, but also that work engagement has a positive relationship with job performance (H8). Also in terms of this hypothesis, the analysis of the data revealed a significant positive relationship ($F(1, 155) = 23.08, b = .18, p < .001, R^2 = .13$).

In relation to the aforementioned hypotheses about affect, work engagement, and job performance, mediation analyses were conducted. Hypotheses 9a and 9b assume that work engagement mediates the relationship between negative affect and job performance (H9a) on the one hand, and the relationship between positive affect and job performance (H9b) on the other. The results of the first mediation analysis confirmed hypothesis H9a ($F(2, 154) = 7.84$, $p < .001$, $R^2 = .13$). Since the relationship between negative affect and job performance was no longer significant after adding the mediator work engagement ($B = -.06$, $p = .221$), a full mediation can be reported (Figure 5).

Figure 5

Graphical Representation of the Mediating Effect of Work Engagement on the Relationship between Negative Affect and Job Performance



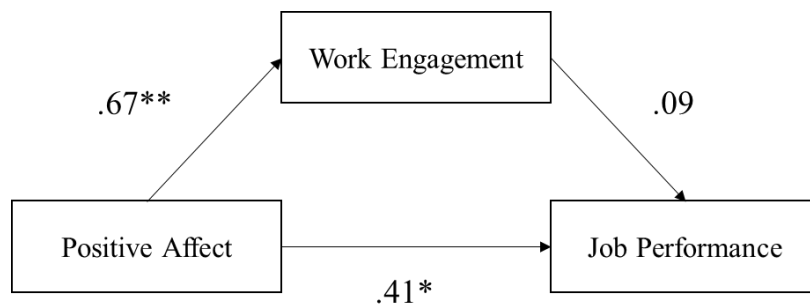
Note. The reported numbers are standardised coefficients.

* $p < .05$ (1-tailed). ** $p < .001$ (1-tailed).

Although the overall model of the mediation postulated in H9b proved significant ($F(2, 154) = 12.60$, $p < .001$, $R^2 = .22$), once the mediator was added the relationship between work engagement and job performance lost its significance ($B = .09$, $p = .269$) and therefore no mediation can be reported. For a better understanding, a graph illustrating the results is provided below (Figure 6).

Figure 6

Graphical Representation of the Mediating Effect of Work Engagement on the Relationship between Positive Affect and Job Performance



Note. The reported numbers are standardised coefficients.

* $p < .05$ (1-tailed). ** $p < .001$ (1-tailed).

Post-hoc Analyses

Group Comparisons

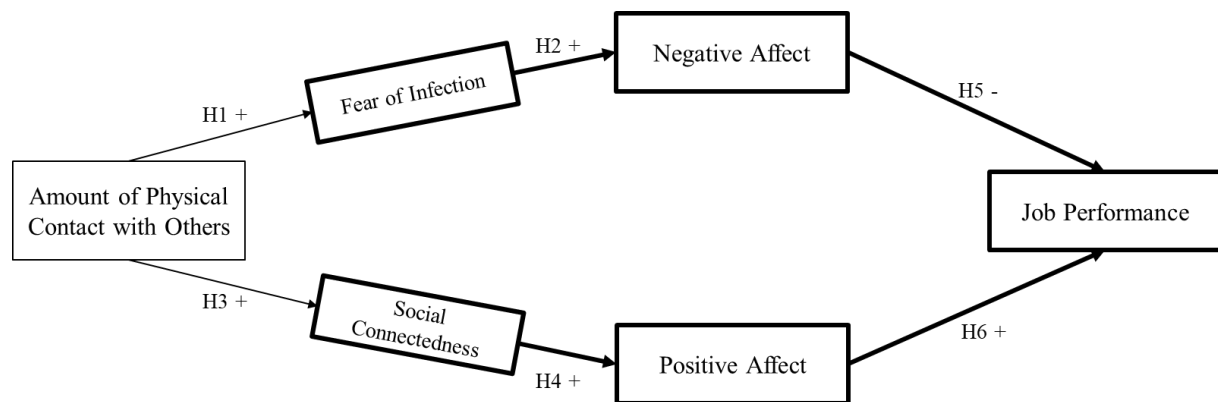
As already mentioned and shown in Figure 3, five occupational groups could be identified. People in the present sample had office jobs, worked in health and social services, education, retail, and various skilled services. The categorisation into the individual groups enables group comparisons with regard to various variables. Of particular interest was whether the groups differed in terms of the fear of an infection and the perceived risk of an infection. Therefore, a one-way ANOVA was conducted. With regard to the fear of an infection, the mean differences between the groups were not significant ($F(4, 133) = 1.08, p = .369, \eta^2 = 0.03$). However, the occupational groups actually differed significantly in their perception of the risk of an infection ($F(4, 133) = 7.89, p < .001, \eta^2 = 0.19$). More specifically, health and social care workers ($n = 32; MW = 3.41, SD = .98$) and office workers ($n = 40; MW = 2.68, SD = .96$) differed significantly ($p = .016$) in their perception of the risk of becoming infected. Furthermore, office workers perceived the risk of an infection to be significantly ($p < .001$) lower than people in the education sector ($n = 30; MW = 3.87, SD = .97$). Individuals in the education sector not only showed significant differences with office workers, but also showed significant ($p = .002$) higher levels of the perceived risk of contracting the virus in comparison to skilled service workers ($n = 15; MW = 2.73, SD = .96$).

Path analyses

Figure 7 shows the theoretical research model of this study in reduced form. Two paths can be seen, starting with the variable *Amount of Physical Contact with Others* and ending with the variable *Job Performance*. The individual correlations were calculated using the linear regression model and have already been reported. Since physical contact with others did not show a significant relationship with neither the fear of an infection ($F(1, 155) = .00, b = .00, p = .462, R^2 = .00$) nor with social connectedness ($F(1, 155) = 2.02, b = .10, p = .079, R^2 = .01$), a path analysis was conducted from fear of infection via negative affect to job performance and from social connectedness via positive affect to job performance.

Figure 7

Paths of the Theoretical Research Model

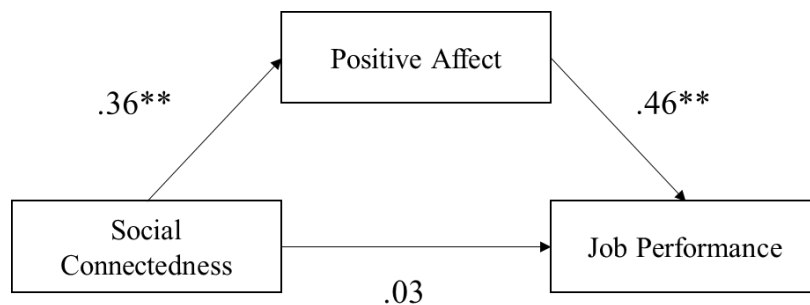


Note. The reduced form of the theoretical research model serves to illustrate the paths that were tested using mediation analysis. On the one hand, the path from fear of infection via negative affect to job performance and on the other hand the path from social connectedness via positive affect to job performance were tested.

Mediation analyses were carried out to verify the pathways. The first mediation with negative affect as a mediator in the relationship between the fear of contracting the virus and job performance could not be confirmed ($F(2, 154) = 2.75, p = .067, R^2 = .03$). The second path model with positive affect mediating the relationship between social connectedness and job performance turned out to be significant ($F(2, 154) = 12.05, p < .001, R^2 = .22$). As this is a full mediation, the pathway can be confirmed as assumed (Figure 8).

Figure 8

Graphical Representation of the Mediating Effect of Positive Affect on the Relationship between Social Connectedness and Job Performance



Note. The reported numbers are standardised coefficients.

* $p < .05$ (2-tailed). ** $p < .001$ (2-tailed).

Discussion

Summary of the Results

The aim of this study was to investigate the impact of physical contact with others while working in times of COVID-19 on the fear of an infection and subsequently on negative affect on the one hand. In this context, physical contact with others is seen as a threat. In addition, moderating effects of being vaccinated and of the perceived risk of an infection on the relationship of the amount of physical contact with others and the fear of an infection should be examined. On the other hand, it was of interest whether physical contact with others can also act as a resource and influences positively the feeling of being socially connected and subsequently leads to positive affect.

Since everything in the present study revolves around well-being, further attention was paid to examining the happy-productive worker hypothesis. The purpose was not only to determine simple correlations between affect and job performance, but also to investigate work engagement as work-related well-being as a mediator in this relationship.

Contrary to the assumptions in the present study, the results implied that forced physical contact during work in times of COVID-19 has no effect on neither the fear of an infection nor social connectedness. Although no associations were found between the amount of physical contact and the fear of contracting an infection, a moderating effect of the perceived risk of an infection on this relationship was found. According to the results, people with low levels of physical contact with others and at the same time a high perceived risk of becoming infected showed the greatest fear of an infection. Vaccination status, in contrast, had no influence on the relationship between physical contact and the fear of an infection.

Although it could not be confirmed that the extent of physical contact has an influence on the fear of an infection, the results of the present study are in line with previous findings of Pérez-Fuentes et al. (2020), showing that the fear of contracting the virus is positively related with negative affect. Also, in terms of social connectedness and positive affect, a positive relationship was found.

Since it was not only of interest how certain variables influence positive and negative affect, but also what impact affect has on job-specific variables, the happy-productive worker hypothesis was tested. In line with Staw et al. (1994) and Zelenski et al. (2008), the results of the present study implied that positive affect is positively associated with overall job performance as well as with task and contextual performance, and shows a negative relationship with counterproductive performance. Further significant associations were found, as negative affect was negatively associated with overall job performance and task performance, and positively with counterproductive work behavior. With regard to negative affect, only in relation to contextual performance no significant effect could be found.

In addition to affect, work engagement as job-related well-being was also included in the research model. While work engagement fully mediated the relationship between negative affect and overall job performance, it did not mediate the relationship between positive affect and job performance.

Not only were the hypotheses tested for their consistency, but post-hoc analyses were also carried out. It was shown that the identified occupational groups differ significantly with regard to the perceived risk of contracting an infection. Furthermore, the results implied that there is a path from social connectedness via positive affect to job performance.

Theoretical Implications

Physical Contact in Times of COVID-19 and its Perception as a Threat and a Resource

Due to the COVID-19 pandemic, life changed abruptly for humanity. From one moment to the next, physical contact was to be avoided to prevent the virus from being passed on. This resulted in a wide variety of measures in all areas of life, including professional life. People were suddenly confronted with an increase in workload, short-time work, fears of losing their jobs, working from home, and further drastic changes in working life (Korunka et al., 2020). Occupational groups differed in terms of the changes they faced due to pandemic response measures and their consequences. While some suddenly had to work from home and therefore, for example, had to struggle with social isolation (e.g., Mann et al, 2000; Hislop et al., 2015; Whittle & Müller, 2009) and blurring boundaries between work and leisure

(Sinclair et al., 2020), others did not have the opportunity to make use of teleworking and were confronted, for example, with increased workload and hours of working in protective clothing (Smith, 2020). Professional groups who nevertheless had to continue their work at their usual place of work had one thing in common: they all had some degree of physical contact with other people at a time when physical contact should be avoided. This led to the assumption that physical contact could be seen as a new job stressor in times of COVID-19. Consequently, the assumption arose that physical contact has an influence on the fear of contracting an infection, which in turn is related to negative affect. However, the extent of physical contact for people who were forced to have physical contact with others because of their job could not be confirmed as a predictor of the fear of an infection in this study. This leads to the assumption that other influencing variables are relevant in connection with the fear of being infected. As already mentioned, Nabe-Nielsen et al. (2021) showed that the fear of becoming infected at the workplace and the fear of passing on the virus was partly dependent on differing risk management for frontline employees. The fear of infecting oneself at the workplace and the transmission of the infection were linked to the exposure to infection, lack of testing facilities and clear communication about guidelines. In terms of the association between clear communication and the fear of becoming infected, the researchers hypothesised that although the guidelines were clearly communicated, they may have been insufficient and therefore this surprising relationship could be found. Frontline employees who felt a sense of security in relation to work organization and planning showed the lowest levels of the fear of infecting themselves and others (Nabe-Nielsen et al., 2021). Therefore, a potential reason for the missing correlation between physical contact with others and the fear of an infection could be that it is not physical contact per se that leads to the fear of infecting oneself and others, but the absence of and the uncertainty about measures in the working environment.

In addition to the job-related factors, such as risk management strategies at the workplace that influence the fear of becoming infected, general factors should not be neglected. Malesza and Kacmarek (2021) could show that on the one side socio-demographic variables have an impact on the anxiety of COVID-19. Women, older people, married couples and those with children showed higher levels of anxiety. Furthermore, individuals with a chronic illness or a generally low health condition were also more anxious. A cross-border longitudinal study over a period of 22 days in March 2020 at the onset of the crisis in Europe came to the same conclusions and additionally found that those with higher levels of education show higher levels of the fear of an infection too (Lippold et al., 2020). In addition

to socio-demographic variables, Lippold et al. (2020) also investigated the influence of personality and political orientation on the fear of an infection. High scores on the personality dimension neuroticism thus predicted high levels of the fear of becoming infected. In terms of political orientation, individuals with conservative attitudes were more afraid of contracting the virus than liberal people, with political orientation no longer playing a role as the perceived risk increased. Personality traits, in contrast, stably predicted the fear of an infection over time. Furthermore, also factors related to COVID-19, such as the greater perceived likelihood of contracting the coronavirus or the greater amount of information about the virus provided by various resources, lead to an increased fear of becoming infected. These general factors, like demographic characteristics, attitudes and perceptions about the virus play an important role in how people perceive the COVID-19 pandemic and its consequences. Therefore, in sum, there are many different factors that could be relevant in relation to the fear of becoming infected.

Previous considerations may also be a possible explanation for the unexpected direction of the moderation of the perceived risk of becoming infected on the relationship between the physical contact with others and the fear of an infection. It was assumed that frontline workers with high amount of forced physical contact with others while working at the same time show high levels of the perceived risk of an infection which subsequently leads to higher levels of the fear of becoming infected. But contrary to these expectations, people with little contact and simultaneously high levels of the perceived risk of becoming infected showed the highest values in the variable fear of infection. It was also observed that in both the high perceived risk condition and the medium perceived risk condition, the fear of an infection decreased with increasing levels of physical contact. These results could again be based on general attitudes towards COVID-19. This means that high levels of anxiety associated with COVID-19 could be attributed to socio-demographic characteristics, personality and general attitudes. According to this, people who generally show a high fear of an infection despite low levels of physical contact perceive the risk of an infection as higher. Post-hoc analyses also revealed significant differences in the perceived risk of an infection between the occupational groups. As perceptions of the risk of an infection differ between the occupational groups, they should be studied independently for COVID-19 related issues.

Vaccination status was also collected in the present study to assess its influence on the relationship between physical contact and the fear of an infection. It was hypothesised that vaccinated individuals with contact with others would have less fear of an infection than unvaccinated individuals. This assumption could not be confirmed, as already reported in the

results section. The conclusion that due to the positive relationship between the fear of an infection and vaccination acceptance (Bendau et al. 2021) vaccination has a buffering effect on the relationship between physical contact and the fear of an infection was obviously too far-fetched. This, in turn, could be due to a general fear of the virus, which vaccination does not change.

According to Pérez-Fuentes et al. (2020), it could be shown that the fear of an infection positively correlates with negative affect. Fear as an adaptive response when confronted with danger has high functionality due to the motivation that is triggered to activate protective behavior (Sloan et al., 2020). In the context of an unprecedented pandemic, feelings of fear and uncertainty are normal human reactions (Gordon, 2020). However, excessive fear can lead to low mental and physical health (Haynes & Rader, 2015; Kubzansky & Kawachi, 2000). Therefore, increased negative affect in response to an increased fear of contracting an infection is a logical consequence. Furthermore, it is well known that mental health can suffer when people are confronted with stressors (Wheaton, 1999). According to Wheaton and Montazer (2010), stressors are “conditions of threat, challenge, demands, or structural constraints that, by the very fact of their occurrence or existence, call into question the operating integrity of the organism” (p. 173). The COVID-19 pandemic can be seen as such a stressor. The fear of becoming infected results from the perception of the threat of COVID-19 (Nellis, 2009; Richman et al., 2008). This fear of an infection is an indicator of COVID-19-related stress which subsequently has the potential to lead to decreased mental health (Pearlin & Bierman, 2013). This again confirms the results of the present study and at the same time shows the complexity of the relationship between the fear of becoming infected and negative affect.

Physical contact in times of a pandemic, when physical contact should be avoided, is primarily seen as a threat. However, precisely because individuals were initially prohibited from having physical contact with others, it can also be seen as a resource for those who were still able to maintain physical contact, as it has been shown that individuals strive for social relationships (Maslow, 1943; Deci & Ryan, 2000; Baumeister & Leary, 1995). As frontline employees did not have the possibility to work from home, they were forced to have contact with other persons and were therefore able to maintain personal social contacts. While the relationship between the amount of physical contact with others and social connectedness could not be found, it could be confirmed that social connectedness and positive affect are positively related. This once again shows the importance of satisfying the need for love,

affection and belongingness, as postulated by Maslow (1943), Deci and Ryan (2000) and Baumeister and Leary (1995). Social relationships help individuals to stay mentally healthy.

The Happy-Productive Worker Hypothesis

Since the 1930s, researchers have been studying the relationship between well-being and job performance (Pennock, 1930) because of the importance for organizational strategies (Zelenski et al, 2008). The happy-productive worker hypothesis postulates that the happier workers are, the more productive they are on their job (Staw et al., 1994; Zelenski et al., 2008). Since results of previous research are inconsistent, it was a concern to investigate this hypothesis. The hypotheses of the present study were based on Hersey's (1932) initial findings on the relationship between mood states and job performance. He found that individuals in a positive state are more productive than those in a negative one. Therefore, negative affect was expected to be negatively associated with overall job performance on the one hand, and positive affect was expected to be positively associated with overall job performance on the other. In addition, correlations between affect and the dimensions of individual job performance according to Koopmans et al. (2011), namely task performance, contextual performance, and counterproductive performance, were also examined. The investigation of the overall individual job performance and its dimensions in connection with affect aimed to study the happy-productive worker hypothesis in more depth.

The results of the study actually showed that positive affect is positively related to overall job performance. This shows that, in line with previous findings by e.g., Hersey (1932), Staw et al. (1994), Zelenski et al. (2008) and Sonnentag (2015), the higher the positive affect of workers, the more productive they are. Furthermore, significant relationships with positive affect could also be demonstrated in relation to the individual dimensions. In accordance with Foo et al. (2009) and Seo et al., (2010), participants in the current study showed high levels of task performance when positive affect was also high. Not only task performance benefited from positive affect, but also contextual performance, which is in line with the findings of Spence et al. (2014). So far, previous study results could be confirmed with the current study, showing that positive affect is important for general job performance as well as for task and contextual performance. According to current knowledge, researchers have not yet been able to agree on whether there is a relationship between positive affect and counterproductive performance. While some have found a negative relationship (Dalal et al., 2009; Ferris et al., 2012), others have been unable to prove any connection at all (Judge et al., 2006; Scott & Barnes, 2011). The hypothesis that positive affect is negatively associated with counterproductive job performance was confirmed in this study. According to

this, workers in a positive mood are less likely to behave counterproductively in their jobs. In post-hoc analyses, it was also found that positive affect not only correlates positively with job performance, but also acts as a mediator between social connectedness and job performance. This again underlines the importance of feeling socially connected with other people, as satisfying the need for relatedness has positive effects on mental health (Maslow, 1943; Deci & Ryan, 2000; Baumeister & Leary, 1995). The mediating role of positive affect in the relationship between social connectedness and job performance also shows that personal social contact at the workplace is not only beneficial for the individual, but also for the organization as a whole, as it guarantees positive affect and subsequently good job performance.

As in the studies by Dalal et al. (2009) and Spence et al. (2011), no correlation was found between negative affect and contextual performance. In this context, it should be mentioned that negative affect compared to positive affect is usually lower in samples of workers, which is also true in the present study and therefore does not take on pathological proportions that would have an impact on job performance (Zelenski et al., 2008). This could be a possible explanation for the lack of significance in this relationship. Furthermore, Lee and Allen (2002) examined the relationship between cognitions, affect and organizational citizenship behavior. They could not find a relationship between affect and organizational citizenship behavior at the organizational level, but they did find a relationship between job cognitions and organizational citizenship behavior. This result is in line with previous findings that organizational citizenship behavior is influenced more by reciprocal needs and less by emotional behavior (Organ, 1990; Organ & Konovsky, 1989), and also represents a possible explanation in the current study. With regard to overall job performance, task performance and counterproductive performance, the patterns happy-productive and unhappy-unproductive could be confirmed. Significant relationships could not only be found with positive affect, but also with negative affect. The results showed that negative affect is negatively associated with overall job performance and task performance on the one hand and positively associated with counterproductive performance on the other. Although the happy-productive worker hypothesis could be supported in almost all cases in this study, reference should be made to the work of Peiró et al. (2019) and Ayala et al. (2017), who were able to show that there are also patterns beyond the happy-productive worker hypothesis. In particular, Peiró et al. (2019) were able to demonstrate that the patterns unhappy-productive and happy-unproductive dominated in their study.

The relevance of examining work engagement and the correlation with affect and job performance arose because work engagement is defined as work-related well-being and should therefore also be studied in connection with the happy-productive worker hypothesis. While affect as a part of subjective well-being can be assigned to the hedonic tradition focusing on pleasure and happiness (Kahneman et al., 1999), work engagement follows both the hedonic and the eudaimonic perspective (Sonnentag, 2015) and thus combines affective well-being (Fisher, 2010; Nixon et al., 2011), and meaning (Rosso et al., 2010) and growth at work (Sonenshein et al., 2013).

Since there is evidence that engagement and disengagement at work are dependent on employees' affective state (Schultz & Edington, 2007) and Bakker and Demerouti (2008) postulate in their job-demands resources model of work engagement that personal resources show a positive relationship with work engagement, it was assumed that positive affect as a personal resource has a positive impact and negative affect as a stressful component has a negative influence on work engagement. Indeed, the results of the study showed that work engagement correlated positively with positive affect and negatively with negative affect. Accordingly, workers show high levels of work engagement when being in a positive affective state and low levels of work engagement when negative affect is high.

The relationship between work engagement and job performance completed the theoretical research model of this study and also provided the basis for further mediation analyses, which is why this relationship was also investigated. The fact that work engagement is positively linked to job performance has been proven many times (e.g., Akkermans et al., 2013; Bakker & Xanthopoulou, 2009; Hakanen et al., 2008; Gorgievski et al., 2010; Simbula & Guglielmi, 2013), including in the current study.

Ferreira et al. (2019) have already shown that productivity losses due to negative affect and emotional exhaustion were reduced when workers felt engaged in their work. In line with this finding, the current study confirmed the assumption that work engagement mediates the relationship between negative affect and job performance. According to this, workers in a negative affective state are less engaged and subsequently show poorer performance. Although, consistent with previous findings (e.g., Rich et al., 2010; Kazén et al., 2008; Akkermans et al., 2013; Simbula & Guglielmi, 2013), work engagement positively correlates with both positive affect and job performance, no mediating role of work engagement in this relationship was found. Bakker and Demerouti (2008) postulate in their job-demands resources model of work engagement that personal resources and job resources have a positive influence on work engagement and that work engagement, in turn, has a

positive impact on job performance. Although positive affect, as mentioned earlier and with regard to the findings of the present study, can be seen as a potential predictor of work engagement, work engagement could not be confirmed in its mediating role between positive affect and job performance. Bakker and Demerouti (2008) further postulated in their model that resources in particular positively influence job performance, when job demands are high. Therefore, it should be considered that no mediation could be found due to the lack of the investigation of job demands.

Practical Implications

Based on the results, some practical implications can also be derived.

As a possible explanation for the lack of the relationship between the amount of physical contact with other persons during the exercise of the profession and the fear of an infection, it has already been mentioned that not the physical contact per se but, with reference to Nabe-Nielsen et al. (2021), the measures taken in dealing with the pandemic could be decisive. Therefore, adequate risk management plays an important role in reducing the fear of infecting oneself or others. This would mean that during a pandemic such as that caused by COVID-19, policies and measures should be comprehensively planned, implemented and clearly communicated to ensure safety for employees. This is of significant relevance as it has already been shown that people who feel safer are less likely to be afraid of an infection (Nabe-Nielsen et al., 2021) and subsequently show lower levels of the fear of becoming infected. Measures that should be implemented could include a wide range of tests and the provision of adequate safety clothing.

According to the results of the current study, occupational groups differ in their perceived risk of contracting an infection. This implies that although all employees in the mentioned occupational groups work in frontline, it is important to distinguish between these groups. This also applies to risk management strategies. Therefore, measures adapted to the job conditions should be taken for the individual occupational groups. The right use of risk management strategies could therefore reduce the fear of an infection, which could subsequently put less strain on workers' mental health.

To identify social and occupational factors that had an impact on the psychological well-being of health care workers during the SARS crisis, Brooks et al. (2018) conducted a systematic literature review. The results form a good basis for practical implications also in the context of COVID-19. They pointed out the importance of providing adequate training about infection control, building team cohesion and social support, enhancing communication strategies, preparing for negative experiences, and developing adequate coping strategies. Not

only Brooks et al. (2018) postulate positive effects of team cohesion and social support on psychological well-being, but also the present study confirms the positive influence of social connectedness on positive affect. Especially in times of a pandemic, when physical contact should be avoided, social connectedness suffers. This makes it all the more important to find ways to maintain social connectedness without violating the rules to contain the spread of the virus. Since social connectedness positively influenced positive affect and positive affect, in turn, had a positive impact on job performance, social connectedness in the work context should be built upon as an important job resource even without a prevailing pandemic. In practice, it is therefore important to create a framework for informal exchange with colleagues in order to strengthen social ties. Examples of this could be recreational spaces in open-plan offices, regular get-togethers outside the workplace and team building events.

For decades, researchers have been interested in the relationship between well-being and job performance due to its importance for organizational management and strategies (Zelenski et al., 2008). The current study once again showed the importance of mental health and the associated subjective well-being. Not only the individual benefits from feeling mentally healthy, but also the organization, as happy employees are more productive employees. Especially nowadays, when workers are confronted with a fast-paced working world and new, sometimes stressful job requirements, it is important to take measures to maintain or restore mental health. Therefore, resources for occupational health management should be created in every organization.

Furthermore, since work engagement as work-related well-being is an essential indicator of occupational well-being for workers and organizations too, it should be a concern of human resource managers to promote work engagement. It is recommended to perform an analysis of the current situation of work engagement and its antecedents in order to determine the extent of work engagement at different levels (e.g., on an individual or a team level, or according to job positions or departments) (Bakker & Demerouti, 2008). According to Kompier (2003) interventions should than be set for individuals and the organization as a whole.

Limitations and Implications for Future Research

The present study has certainly provided new insights into the research field of industrial and organizational psychology, but it is still subject to some limitations that will now be discussed in more detail.

First of all, results were collected via a one-time survey using an online questionnaire. With respect to the research model and the related analyses conducted for hypotheses testing,

a cross-sectional study design should not be the procedure of choice. In order to conduct mediation and path analyses, it usually requires longitudinal surveys. Therefore, caution should be exercised when interpreting the results, as causal conclusions cannot be drawn due to the lack of further measurement time points.

Furthermore, the items of the questionnaire on the fear of an infection were personally translated into German and included in the current study without a pre-study. This accepted the risk that internal consistencies might suffer from the translation. But in the end, the reliability analysis in the data evaluation showed good values of Cronbach's α , which is why this point is negligible in the current study. Nevertheless, attention should be paid to it when conducting further studies.

Apart from this, another issue was that job performance was only surveyed via self-assessment. In subjective assessments of sensitive topics, respondents often fall victim to bias and give socially desirable answers. Job performance is a sensitive issue because, despite the assurance of anonymity, participants may be afraid that answers will reach their supervisor. Therefore, for a better and more comprehensive understanding of job performance, it would have been advantageous to have both the participants themselves rate their performance and to involve supervisors or colleagues in an objective assessment.

In terms of content, the survey of the extent of physical contact can be cited as a limitation. The extent of physical contact was only surveyed with one question. As reported earlier, no significant correlations were found neither with the fear of an infection nor with social connectedness. A more in-depth survey of physical contact would have been useful. This also immediately led to further considerations regarding future research.

Since no correlation was found between the amount of physical contact and the fear of an infection, it should be a goal of future research to assess job-related factors that influence the fear of infecting oneself and others, in addition to general factors such as personality, socio-demographic characteristics and political attitudes. In relation to the findings of Nabe-Nielsen et al. (2021), risk management strategies in the workplace and their effects should be examined more closely. Furthermore, it could be found that occupational groups differ in the perception of the risk of an infection. This suggests that although all workers in the occupational groups identified here are frontline workers, an independent study of each occupational group should be undertaken in the future, as each group faces different demands.

With regard to the happy-productive worker hypothesis, special attention should be paid to the still little researched patterns of unhappy-productive and happy-unproductive

workers. This would be important in order to move away from black-and-white thinking of the happy-productive worker hypothesis.

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Appendix

Abstract (English)

The COVID-19 pandemic has kept the entire world on tenterhooks since the beginning of 2020. All areas of life are affected by the consequences of the pandemic, including the world of work. Workers in different occupational groups have been confronted with changed working conditions and new challenges from one moment to the next. Especially people in system-maintaining professions, such as doctors, nurses, shop assistants, etc., have been extremely challenged since the beginning of the crisis. Even though system-maintaining professions differ in their requirements, they have one thing in common: physical contact with customers, patients, clients, etc. at a time when physical contact should be avoided. This led to the interest in the following study to investigate the extent of physical contact and its effects on the well-being of frontline workers. Well-being occupies a central place in the research model, as the happy-productive worker hypothesis was to be investigated subsequently. In total, data from 157 people who answered an online questionnaire could be analysed. The results showed no effect of the extent of physical contact on the fear of becoming infected and social connectedness. However, the perceived risk of an infection had an influence on the relationship between physical contact and the fear of contracting the virus that was not as expected. Significant associations were found between the fear of an infection and negative affect as well as between social connectedness and positive affect. The happy-productive worker hypothesis was largely confirmed, and work engagement also showed a positive relationship with job performance.

Keywords. COVID-19, Physical contact, Fear of infection, Social connectedness, Affect, Happy-productive worker hypothesis, Work engagement, Job performance

Abstract (German)

Die COVID-19 Pandemie hält seit Beginn des Jahres 2020 die gesamte Welt in Atem. Alle Lebensbereiche sind von den Konsequenzen der Pandemie betroffen, so auch die Arbeitswelt. Arbeiter*innen verschiedener Berufsgruppen waren von einem Moment auf den anderen mit veränderten Arbeitsbedingungen und neuen Herausforderungen konfrontiert. Besonders Personen in systemerhaltenden Berufen, wie Ärzt*innen, Krankenpfleger*innen, Verkäufer*innen, etc., sind seit Beginn der Krise überaus gefordert. Auch, wenn sich systemerhaltende Berufe in ihren Anforderungen unterscheiden, haben sie doch eines gemeinsam: den physischen Kontakt mit Kund*innen, Patient*innen, Klient*innen, etc. in einer Zeit wo physische Kontakte vermieden werden sollten. Daraus resultierte das Interesse mit der folgenden Studie das Ausmaß physischen Kontakts und die Auswirkungen dessen auf das Wohlbefinden von Arbeiter*innen in systemerhaltenden Berufen zu untersuchen. Das Wohlbefinden nimmt im Forschungsmodell dabei einen zentralen Platz ein, da in weiterer Folge die *Happy-Productive Worker Hypothese* untersucht werden sollte. Insgesamt konnten Daten von 157 Personen, die einen Online-Fragebogen beantworteten, ausgewertet werden. Die Ergebnisse zeigten keine Auswirkungen des Ausmaßes physischen Kontakts auf die Angst sich zu infizieren und die soziale Verbundenheit. Jedoch hatte das wahrgenommene Risiko einer Infektion einen, nicht den Erwartungen entsprechenden, Einfluss auf die Beziehung zwischen physischem Kontakt und der Angst am Virus zu erkranken. Signifikante Zusammenhänge zwischen der Angst einer Infektion und negativem Affekt als auch zwischen der sozialen Verbundenheit und positivem Affekt konnten festgestellt werden. Die *Happy-Productive Worker Hypothese* konnte weitestgehend bestätigt werden und auch Arbeitsengagement zeigte eine positive Beziehung zu der Arbeitsleistung.

Schlagwörter. COVID-19, Physischer Kontakt, Angst einer Infektion, Soziale Verbundenheit, Affekt, Happy-Productive Worker Hypothese, Arbeitsengagement, Arbeitsleistung

Questionnaire

Socio-demographic data and job-specific variables

Item	Answer options
Wie alt sind Sie?	< 30 30-45 > 45
Welchem Geschlecht fühlen Sie sich zugeordnet?	Männlich Weiblich Divers Keine Angabe
Welche Nationalität haben Sie?	Österreich Deutschland Andere
Was ist Ihr höchster Bildungsabschluss?	Pflichtschule/Lehrausbildung Matura/Abitur Hochschul-/Universitätsabschluss
Arbeiten Sie derzeit durchschnittlich mindestens 20 Stunden pro Woche?	Ja Nein
Wie viele Stunden arbeiten Sie derzeit durchschnittlich pro Woche?	[Freies Textfeld]
An wie vielen Tagen arbeiten Sie derzeit durchschnittlich pro Woche?	[Freies Textfeld]
Haben Sie derzeit im Rahmen der Ausübung Ihres Berufes gezwungenermaßen/notwendigerweise physischen Kontakt mit anderen Personen? (Erklärung: auch persönlicher	Ja Nein

Kontakt mit anderen Personen ohne direkte körperliche Berührungen zählt hier zu physischem Kontakt; virtuelle Kontakte sind ausgenommen)

Wie häufig haben Sie im Rahmen der Ausübung Ihres Berufes gezwungenermaßen/notwendigerweise physischen Kontakt mit anderen Personen?

Selten
Manchmal
Oft
Immer

Wie hoch schätzen Sie das Risiko ein bei der Ausübung Ihres Berufes mit Corona infiziert zu werden?

Kein Risiko
Gering
Mittel
Hoch
Sehr hoch

Sind Sie bereits gegen das Coronavirus geimpft?

Nein
Ja, habe die erste Teilimpfung erhalten
Ja, bin vollständig geimpft
Keine Angabe

In welcher Branche sind Sie tätig? [Freies Textfeld]

Welchem Beruf gehen Sie nach? [Freies Textfeld]

Positive and Negative Affect Schedule

Item	Answer options				
	Gar nicht – Äußerst				
Aktiv	1	2	3	4	5
Bekümmert	1	2	3	4	5
Interessiert	1	2	3	4	5
Freudig erregt	1	2	3	4	5
Verärgert	1	2	3	4	5

Stark	1	2	3	4	5
Schuldig	1	2	3	4	5
Erschrocken	1	2	3	4	5
Feindselig	1	2	3	4	5
Angeregt	1	2	3	4	5
Stolz	1	2	3	4	5
Gereizt	1	2	3	4	5
Begeistert	1	2	3	4	5
Beschämt	1	2	3	4	5
Wach	1	2	3	4	5
Nervös	1	2	3	4	5
Entschlossen	1	2	3	4	5
Aufmerksam	1	2	3	4	5
Durcheinander	1	2	3	4	5
Ängstlich	1	2	3	4	5

Utrecht Work Engagement Scale

Item	Answer Options						
	Nie – Immer						
Bei meiner Arbeit bin ich voll überschäumender Energie.	1	2	3	4	5	6	7
Beim Arbeiten fühle ich mich fit und tatkräftig.	1	2	3	4	5	6	7
Ich bin von meiner Arbeit begeistert.	1	2	3	4	5	6	7
Meine Arbeit inspiriert mich.	1	2	3	4	5	6	7
Wenn ich morgens aufstehe, freue ich mich auf meine Arbeit.	1	2	3	4	5	6	7
Ich fühle mich glücklich, wenn ich intensiv arbeite.	1	2	3	4	5	6	7
Ich bin stolz auf meine Arbeit.	1	2	3	4	5	6	7
Ich gehe völlig in meiner Arbeit auf.	1	2	3	4	5	6	7
Meine Arbeit reißt mich mit.	1	2	3	4	5	6	7

Individual Job Performance Questionnaire

Task Performance

Item	Answer Options				
	Selten - Immer				
In den letzten Tagen habe ich es geschafft, meine Arbeit so zu planen, dass sie rechtzeitig erledigt wurde.	1	2	3	4	5
In den letzten Tagen war meine Planung optimal.	1	2	3	4	5
In den letzten Tagen habe ich mir die gesetzten Ziele, die ich bei der Arbeit zu erreichen habe, stets vor Augen gehalten.	1	2	3	4	5
In den letzten Tagen war ich in der Lage Prioritäten zu setzen.	1	2	3	4	5
In den letzten Tagen war ich in der Lage meine Arbeit schnell und mit minimalem Aufwand zu erledigen.	1	2	3	4	5

Contextual Performance

Item	Answer Options				
	Selten - Immer				
In den letzten Tagen habe ich (bei der Arbeit) zusätzliche Verpflichtungen übernommen.	1	2	3	4	5
In den letzten Tagen habe ich mit Eigeninitiative neue Aufgaben begonnen, wenn die vorherigen Aufgaben erledigt waren.	1	2	3	4	5
In den letzten Tagen habe ich herausfordernde Aufgaben angenommen, wenn diese verfügbar waren.	1	2	3	4	5
In den letzten Tagen habe ich daran gearbeitet, mein Arbeitswissen auf dem neusten Stand zu halten.	1	2	3	4	5

In den letzten Tagen habe ich daran gearbeitet, meine Arbeitsfähigkeiten auf dem neusten Stand zu halten.	1	2	3	4	5
In den letzten Tagen habe ich kreative Lösungen für neue Probleme aufgebracht.	1	2	3	4	5
In den letzten Tagen habe ich immer wieder nach neuen Herausforderungen in meiner Arbeit gesucht.	1	2	3	4	5
In den letzten Tagen habe ich aktiv an Arbeitssitzungen teilgenommen.	1	2	3	4	5

Counterproductive Performance

Item	Answer Options				
	Nie – Oft				
In den letzten Tagen habe ich mich bei der Arbeit über unwichtige Sachen beschwert.	1	2	3	4	5
In den letzten Tagen habe ich Probleme bei der Arbeit größer gemacht, als sie waren.	1	2	3	4	5
In den letzten Tagen habe ich mich auf negative anstatt auf positive Aspekte einer Arbeitssituation fokussiert.	1	2	3	4	5
In den letzten Tagen habe ich mit Arbeitskollegen/Arbeitskolleginnen über die negativen Aspekte meiner Arbeit gesprochen.	1	2	3	4	5
In den letzten Tagen habe ich mit Personen außerhalb des Unternehmens über die negativen Aspekte meiner Arbeit gesprochen.	1	2	3	4	5

UCLA Loneliness Scale*Social Connectedness*

Item	Answer Option				
	Gar nicht - Völlig				
Es gibt Menschen, denen ich mich nahe fühle.	1	2	3	4	5
Es gibt Menschen, die mich wirklich verstehen.	1	2	3	4	5
Es gibt Menschen, mit denen ich reden kann.	1	2	3	4	5
Es gibt Menschen, an die ich mich wenden kann.	1	2	3	4	5
Ich fühle mich im Einklang mit den Menschen um mich herum.	1	2	3	4	5
Ich fühle mich als Teil eines Freundeskreises.	1	2	3	4	5
Ich habe viel mit den Menschen um mich herum gemeinsam.	1	2	3	4	5

COVID Stress Scales

Item	Answer Options				
	Überhaupt nicht - Sehr				
Ich mache mir Sorgen, dass ich mir das Virus einfangen könnte.	1	2	3	4	5
Ich mache mir Sorgen, dass ich meine Familie nicht vor dem Virus schützen kann.	1	2	3	4	5
Ich mache mir Sorgen, dass unser Gesundheitssystem nicht in der Lage sein wird, meine Angehörigen zu schützen.	1	2	3	4	5

Ich mache mir Sorgen, dass unser Gesundheitssystem nicht in der Lage ist, mich vor dem Virus zu schützen.	1	2	3	4	5
Ich mache mir Sorgen, dass die grundlegende Hygiene (z.B. Händewaschen) nicht ausreicht, um mich vor dem Virus zu schützen.	1	2	3	4	5
Ich mache mir Sorgen, dass das Social Distancing nicht ausreicht, um mich vor dem Virus zu schützen.	1	2	3	4	5
Ich mache mir Sorgen, dass ich mich mit dem Virus anstecken könnte, wenn ich etwas im öffentlichen Raum berühre (z.B. Türgriff).	1	2	3	4	5
Ich mache mir Sorgen, dass ich mir das Virus einfangen könnte, wenn jemand in meiner Nähe hustet oder niest.	1	2	3	4	5
Ich mache mir Sorgen, dass Menschen in meiner Umgebung mich mit dem Virus anstecken könnten.	1	2	3	4	5
