The Effect of Home Office on the Quality of Working Life in Terms of a Global Pandemic

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Dissertation submitted in partial fulfilment of requirements for the MSc in International Management with a Major in Strategy & Consulting, at the Universidade Católica Portuguesa, 05.01.2022.

I. Abstract English

The global pandemic changed the way of working for people worldwide due to social distancing measures. From a managerial perspective, it is essential to understand how the implementation of home office affects jobs and consequently employees' quality of working life (QWL). The objective of this dissertation was to study the reliability of the proposed theory of Hackman and Oldham (1975) in times of a global pandemic and home office. Moreover, the aim was to use this framework to understand the effects of home office on the QWL. The results confirm the general approach of Hackman and Oldham with minor exceptions and provide relevant insights about the job changes due to the implementation of home office and their effects on satisfaction as a representative of QWL. The empirical research provides evidence that the implementation of home office increased employees' autonomy and required skill variety in order to perform their job since working from home. In contrast, employees perceive their jobs as less significant, identify less with their jobs and receive less feedback since working from home, which affects satisfaction negatively. The empirical results indicate that the QWL of employees is negatively affected by the implementation of home office.

Title: The Effect of Home Office on the Quality of Working Life in Terms of a Global Pandemic

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Keywords: Quality of Working Life, Employee’s Satisfaction, Remote Working, Pandemic

II. Abstract Portuguese

A pandemia global mudou a forma de trabalhar para as pessoas em todo o mundo devido às medidas de distanciamento social. De uma perspectiva de gestão, é essencial compreender como a implementação do escritório em casa afecta o emprego e, consequentemente, a qualidade de vida laboral dos trabalhadores (QWL). O objectivo desta dissertação era estudar a fiabilidade da teoria proposta de Hackman e Oldham (1975) em tempos de uma pandemia global e de escritório em casa. Além disso, o objectivo era utilizar este quadro para compreender os efeitos do home office sobre a QWL. Os resultados confirmam a abordagem geral de Hackman e Oldham, com pequenas excepções, e fornecem informações relevantes sobre as mudanças de trabalho devido à implementação do home office e os seus efeitos na satisfação enquanto representante da QWL. A investigação empírica fornece provas de que a implementação do home office aumentou a autonomia dos empregados e exigiu uma variedade de aptidões a fim de desempenharem o seu trabalho desde que trabalham a partir de casa. Em contraste, os empregados vêem o seu trabalho como menos significativo, identificam-se menos com o seu trabalho e recebem menos feedback desde que trabalham a partir de casa, o que afecta negativamente a satisfação. Os resultados empíricos indicam que a QWL dos empregados é negativamente afectada pela implementação do escritório em casa.

Título: O Efeito do Home Office na Qualidade da Vida Profissional em Termos de uma Pandemia Global

Autor: Corinna Simon

Palavras-chave: Qualidade de Vida Profissional, Satisfação do Empregado, Trabalho à distância, Pandemia

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1. Introduction

The outbreak of COVID-19 and the resulting global pandemic affected individuals' personal lives, as well as companies all over the world. Some companies were able to extract advantages of the pandemic, but the majority suffered due to one of the biggest global economic shocks in history (Braithwaite, 2020; Carlsson-Szlezak et al., 2021). External circumstances like weakened spending power, reduced investments, and a stagnant economy are not steerable from a managerial perspective (Fu et al.,2020). However, some factors are within reach of a company's responsibility.

A firm's performance and profitability are proven to be affected by its human capital. Besides employee recruitment and selection procedures, employees' effectiveness contributes significantly to a firm's performance. Even highly skilled employees bring no added value if they are not motivated (Huselid, 1995). Hence, management research provides evidence for the implications of employees motivation on productivity (Sauermann & Cohen, 2010; Miller & Monge, 1986; Spreitzer, 1995). This highlights already the urgency to understand how the global pandemic affects human capital.

In March 2020, millions of people worldwide were forced to switch rapidly to working from home due to lockdown restrictions. Within the EU, the share of remote working employees aged 15-64 has doubled in 2020 and reached its highest value with 12,3% (Eurostat, 2021). Solely in the United States, the proportion of employees working from home in 2020 constitutes of 71%. In contrast, only a proportion of 21% worked remotely prior to the pandemic (Parker et al., 2020).

Interestingly, even prior to the pandemic, remote working has though been an emerging central managerial topic. With increased technological innovation, the amount of people working remotely has also increased. Over the last 30 years, the number of people working remotely has more than tripled in the United States and increased from 0,75% in 1980 to 2,4% in 2010 (Shamir & Salomon, 1985; Bloom, Liang, Roberts & Ying, 2014). Even global companies like Amazon, Apple, and American Express offered remote working before restrictions made it obligatory in 2020 (Choudhury and Foroughi, 2020). Why? Offering work from home (WFH) counts to Human Resource Management Practices and aims to enhance the Quality of Working Life (QWL), which implies an individual's job-related well-being. Research indicates that the QWL correlates with employees satisfaction, motivation, and productivity (Katz, Kochan & Gobeille, 1983; Huselid, 1995, Bloom et al., 2014). Consequently, the QWL is an essential aspect for managers to monitor and understand the implications of working from home.

In order to answer the research question, the following dissertation is divided in five sections. First, the literature review summarizes the state of the art concerning working from home and the quality of working life. Second, the data collection and methodology section will present the study's research methodology approach and the utilized instrument to collect the data. Section three presents the conducted analysis and briefly presents the results. Section four aims to discuss the plausibility of the results in light of previous research and with regards to the underlying theory. The next section highlights limitations and future research objectives. Finally, section five contains a conclusion about the results and presents recommendations for managerial measures.

2. Literature Review

2.1. Working From Home

Previous research regarding home office provides controversial evidence about the suitability of remote working. The most cited positive conception is increased employees' satisfaction which is approved to be an indicator for productivity (Pinsonneault & Boisvert, 2001; Miller & Monge, 1986; Umstot, Bell & Mitchell, 1976). The increased degree of satisfaction is attributable to several aspects. Firstly, remote working offers employees an increased degree of flexibility and the possibility to schedule work activities according to their own preferences (Riley & McCloskey, 1997; Richter, 2020). Secondly, working from home reduces commuting time and stress (Anderson, Kaplan & Vega, 2014; Fonner & Roloff, 2010; Guimaraes & Dallow, 1999). As a result, balancing work and personal responsibilities is facilitated (Riley & McCloskey, 1997). Lastly, working from home prevents distraction and disruptions from other co-workers, which increases perceived control over work (Kurland & Bailey, 1999).

On the contrary, another extensive body of research also suggests that the benefits of working from home may be offset by the increasingly blurred boundaries between private and business life. The constant connectivity is proven to increase work speed, the workload itself, and productivity expectations. Hence, it is challenging for employees to maintain a work-life balance and satisfy organizational and individuals' needs (Ayyagari, Grover, and Purvis (2011). A further identified drawback is the separation from other co-workers, which decreases social interaction. This includes informal conversations at the workplace, as well as formal meetings and mentoring or job-related feedback (Cooper & Kurland, 2002). The missing personal exchange can lead to feelings of isolation, frustration and finally affect satisfaction negatively (Cooper & Kurland, 2002; Yap & Tng, 1990).

Eventually, Golden and Veiga (2005) made an attempt to reconcile the previously outlined inconsistent findings and argue that the relationship between remote working and job satisfaction is not linear irrespective of the nature of the job. A curvilinear relationship in the shape of an inverted U demonstrates that higher levels of telecommuting initially increase job satisfaction but essentially stagnate and decrease. The relationship is more complex than previously assumed and conditioned by different work activities embedded in the individual's job. Jobs with high task interdependence, meaning that employees must rely on other co-workers in order to perform their tasks effectively, have lower rises in satisfaction when working from home compared to employees with low task interdependence. The increased dependency on others requires effective communication, which is mounting complex when

working from home due to reduced social interactions. Moreover, jobs with a high level of job discretion, meaning that employees have control and autonomy over how to perform their jobs, have enhanced levels of job satisfaction when working from home compared to those with low job discretion. Autonomous working without the need for clarification and approval is facilitated when working from home and accompanied by less distraction. The study offers interesting insights but remains limited in its validity for the current situation since it does not capture the satisfaction levels before implementing remote working. Consequently, it does not allow to conclude the direct impact of the job change. Only high technology-based professionals were involved who had been working remotely for on average more than four years already. Still, the findings accentuate that the nature of the job is an important determinant in affecting the relationship between home office and satisfaction and is still insufficiently explored in light of the current situation.

The first randomized experiment on working from home was recently published by Bloom et al. (2014), thereby overcoming one limitation of previous research. The involvement of a randomized controlled experiment allows comparing levels of satisfaction and performance in the home office and office context. The experiment revealed that positive outcomes like fewer sick days, fewer breaks, and reduced commute times are attributable to remote working. Furthermore, those outcomes were accompanied by increased productivity and substantially higher scores in work satisfaction and psychological attitudes. However, the study exclusively focused on call center employees who hold a suitable job for remote working. Like previous studies, the study also disregards how the job changes in the context of home office and consequently affects QWL. Moreover, the shift from office to home office was implemented in a systematic and structured way that does not apply to employees affected by the pandemic in 2020.

Previous research has illuminated various perspectives of the implications of home office, but no study to date has examined the influence of home office on the QWL with detailed consideration of the job change. Especially the accelerated development of work-at-home arrangements for various jobs within the past two years requires a deeper understanding of the implications of home office on the QWL. From a managerial perspective, it is crucial to understand how the job change affects employees satisfaction and motivation. Dedicated insights allow managers to control the QWL with coping strategies or job redesign.

2.2. Quality of Working Life and Working From Home

Indeed, a paper by Shamir and Salomon back in 1985 already examined the implications of work at home arrangements on the QWL and considered the job change as a primary component affecting the QWL. Since QWL is not defined by an acknowledged definition, Shamir and Salomon (1985) aggregate several aspects and refer to QWL as the "Individual's job-related well-being and the extent to which his or her work experience is rewarding, fulfilling and devoid of stress and other negative personal consequences." Besides the job itself (referred to as task characteristics), they also identify social relations, job-related stress, work-nonwork relationships, power, status, equity, and other latent functions as aspects of QWL. The paper examines the work-at-home arrangement back at the present stage of theories and knowledge. At that time, they concluded that work-at-home arrangements might lead to an improvement of the QWL, especially when the home office arrangement is flexible and allows employees to switch between home office and office. This proposition is supported by the findings of Golden and Veiga (2005), who argue that telecommuting and satisfaction only correlate positively to a certain extent and that job characteristics condition the relationship. Nonetheless, the stated propositions in the paper have never been researched and remain unverified till now. Thus, the conclusions and managerial recommendations for actions are constrained and not state of the art. The previously outlined literature gap and the current situation pose the option to use the paper as a guiding framework to design a research program. Since the previous literature review exposed the demand for studying specifically how working from home changes the job and affects the QWL, the following dissertation will only focus on the dedicated hypothesis of the paper referring directly to the job (Shamir and Salomon, 1985). Those hypotheses will be evaluated concerning the current situation and state of the art and ultimately either supported or not.

Shamir and Salomon (1985) refer to the widely accepted formulation by Hackman & Oldham (1975), which aims to understand how existing jobs influence employees' satisfaction and motivation and if and how they can be redesigned to increase those outcomes. The formulation also intends to evaluate the effects of job changes on employees, emphasizing its suitability for this dissertation's objective. According to the formulation, employees satisfaction and productivity are dependent on three critical psychological states: experienced meaningfulness of work, experienced responsibility for outcomes of the work, and knowledge of the actual results of work. These psychological states are determined by five core job dimensions: skill variety, task identity, task significance, autonomy, and feedback. The theory states that the presence of the three critical psychological states leads to high internal work motivation, high

quality work performance, high satisfaction with the work, and low absenteeism and turnover. In detail, the experienced meaningfulness captures how meaningful, valuable, and worthwhile an employee experiences the job, which is shaped by the three of the job core dimensions: skill variety, task identity, and task significance (Figure 1).

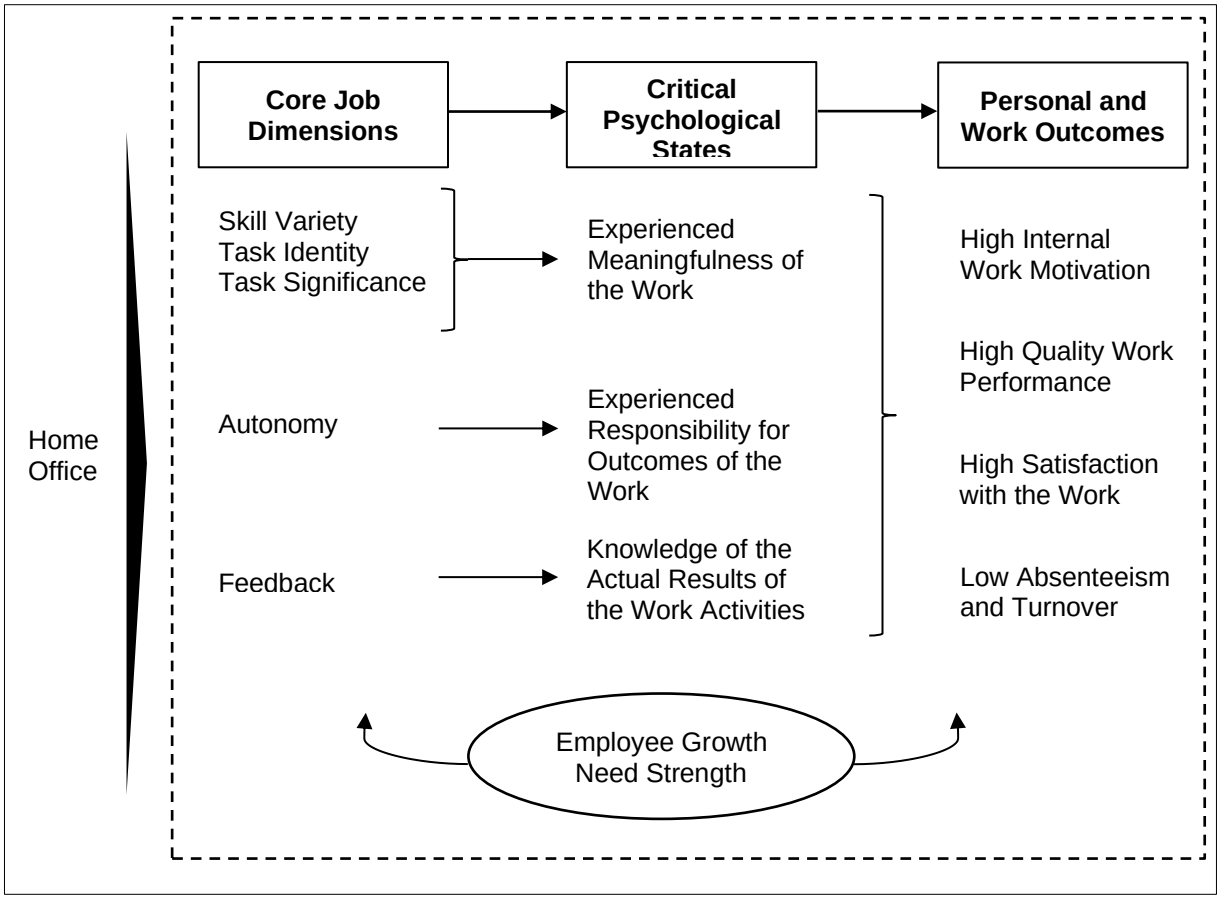


Figure 1: Theoretical model of Hackman & Oldham (1974) relating the Job Core Dimensions, the Critical Psychological States and the on-the-job outcomes under the influence of Home Office

Skill variety reflects the degree to which the employee uses different skills and talents in order to perform their job. Even though Shamir and Salomon (1985) hypothesized that skill variety remains unaffected on the individual level, present-day research presents indicators to assume otherwise. The development of digital workplaces forces employees to adapt to new digital work practices and upskill in order to complement the technology (Bresnahan et al., 2002; Papagiannidis & Marikyan, 2020). Hence, the following can be proposed:

Hypothesis 1:

The job core dimension skill variety is increased when working from home.

Task identity is exchanged for task meaningfulness in the work of Shamir and Salomon (1985) and hypothesized to be reduced since the employee's work is expected to be individualized and not incorporated into meaningful group tasks. In order to be consistent with the formulation of Hackman & Oldham (1974), task identity will be included, which refers to the degree to which an employee is responsible for the completion of a whole and identifiable piece of work with a visible outcome. Recent surveys from the lockdown already indicate that employees feel the need to justify how they spent their workdays due to the reduced visibility. The urge to demonstrate that they are engaged and available leads to increased checking of emails and time spent online (Richter, 2020). The striving for visible outcomes would assume to increase task identity. However, the new environment of remote working prohibits social interaction and might consequently impede communication which is necessary in order to complete individual tasks (Cooper & Kurland, 2002). Hence, the following can be proposed:

Hypothesis 2:
The job core dimension task identity decreases when working from home.

Task significance is defined as the degree to which the job has a substantial impact on the lives or work of other people – whether in the immediate organization or in the external environment (Hackman & Oldham, 1974). The separation from other co-workers offers fewer opportunities for informal communication. As a result, there are fewer opportunities to observe other people's work and to observe the individual's task impact (Shamir & Salomon, 1985). Thus, the stated hypothesis by Shamir and Salomon can be supported, which states the following:

Hypothesis 3:
The job core dimension task significance decreases when working from home.

The psychological state "experienced responsibility for work outcomes" is given by the core job dimension autonomy (Hackman & Oldham, 1985). The theory states that a job with high autonomy, meaning freedom, independence, and discretion for the employee to perform the job independently, increases the psychological state. Working from home signifies less supervision and, therefore, more flexibility for employees to schedule working hours according to their own preferences (Shamir & Salomon, 1985; Riley & McCloskey, 1997). Hence, the following can be proposed:

Hypothesis 4:
The job core dimension autonomy increases when working from home.

Lastly, feedback represents how much direct and clear information an individual gathers from carrying out the work activities. A job high on the core dimension feedback leads to a high score in the psychological state knowledge of the actual results of work. The reduction of social contacts offers fewer opportunities to engage in informal and formal face-to-face interactions, which are sources of direct and indirect feedback (Yap & Tng, 1990). Working at home requires actively seeking feedback via digital channels, which might be an obstacle. Furthermore, digital tools like collaboration platforms and video conferencing are reliable in transferring the content of a message but lack the ability to transfer emotional and nonverbal aspects of communication and feedback. Thus, it is not only the quantity of feedback that is affected but also the quality (Richter, 2020; Shamir & Salomon, 1985).

Hypothesis 5:
The job core dimension feedback decreases when working from home.

Finally, according to the theory, changes in the job core dimensions are reflected in changes in the critical psychological states and determine personal and work outcomes. The personal and work outcomes capture internal motivation and satisfaction measures and consequently capture the central concept of the QWL (Hackman & Oldham, 1974; Shamir & Salomon, 1985). Thus, measures of personal and work outcomes represent the QWL in the context of this dissertation. Since three out of five core dimensions are expected to decrease when working from home, critical psychological states are also expected to decrease and negatively affect measures of personal and work outcomes. Hence, the following can be proposed regarding the effects of home office on the QWL:

Hypothesis 6:
Working at home influences the quality of working life negatively.

3. Data Collection & Methodology

3.1. Research Method

The presented theory of Hackman and Oldham (1985) (Figure 1) is linked to a specific measurement tool, the Job Diagnostic Survey (JDS), which aims to measure the characteristics of a job and how those are affected when changes in the job occur. Moreover, the JDS as a methodological instrument records measures of the critical psychological states as mediating between the job core dimensions and the personal and work outcomes. The personal and work outcomes are measured by enquiring about the employee's personal, affective reactions or feelings performing the job. Since the JDS explicitly provides measures for the three classes of variables, the JDS represents a quantitative methodology approach. The empirical analysis of this dissertation is based on restricted-use data collected using a survey designed to test the hypothesis stated above. The survey is based on the JDS but is subject to modifications to adapt to this study's context. The measures and associated modifications will be elaborated in the further course.

3.2. Sample

The results reported are based on data obtained from 223 participants, which made it through the previously described screening question. Initial screening for missing data was conducted by calculating the sum of each row. Overall, 42 rows were detected with missing values and were removed from the data set. This resulted in a final sample of 181 participants, representing 53 female and 128 male respondents. Overall, 65% of the respondents are aged between 26 and 40 years, and 75% live in Germany. Respondents represented a variety of ethnicities, even though almost 87% were white. Regarding education, 31% hold a Bachelor's degree, 40% hold a Master's degree, and 21% hold even a Doctorate. Regarding the living situation, 29% live with friend/s, 23% live alone, and 47% live with a spouse or partner. The majority (57%) has at least one child.

3.3. Data Collection Procedure

The required sample was obtained by disseminating a modified questionnaire based on the original JDS. The questionnaire was disseminated to the personal network and published and reposted via social media platforms such as LinkedIn, Instagram, and Facebook. To satisfy the sample frame requirement, a screening question was developed to ensure that only people affected by home office arrangements were included. This question was, "Do you work in an

office environment that needed to adapt to changes due to lockdown restrictions in 2020?". If the respondents answered affirmatively, their response was recorded. This procedure made it possible to target the desired population affected by home office arrangements. Lastly, respondents were assured of data anonymity and confidentiality.

3.4. Measures

Summary statistics are shown in Table 1, and Pearson correlations are shown in Table 2.

The original JDS comprises eight sections measuring each of the concepts in the theory sketched and also captures supplementary measures of the employees' reaction.

The first class of variables, the job core dimensions, were measured from items in section one. Besides the already presented five job core dimensions, Hackman and Oldham (1974) identified two additional dimensions which aid in understanding jobs and employee reactions – feedback from agents and dealing with others. Feedback from agents refers to the degree to which employees receive clear information about his or her work performance from supervisors or co-workers. Dealing with others refers to the degree to which employees need to work closely with other people in carrying out the work activities. Therefore, seven job core dimensions were measured in section one. Section one remained identical with the original JDS and provided a single item for each of the seven job dimensions. Respondents rated their objective assessment on a seven-point Likert scale anchored by 1 (very little) and 7 (very much). Exemplary, the question format for the job dimension skill variety was provided as: "How much variety is there in your job? Does it require using a variety of skills and talents?". It is important to notice that respondents were explicitly asked in section one to describe their job as objectively as possible in order to maintain a distinction between the description of the job per se and employees' personal and affective reactions to the job in the later course of the survey.

Section two underlies modifications compared to the original JDS. Instead of measuring the job core dimensions again, this part of the survey was modified to capture perceived changes of the job core dimensions since working from home. Respondents were asked to indicate how accurate or inaccurate each statement describes their current job. The descriptions were adapted to the context of this dissertation and feature the following format: "Since working from home…". Respondents were asked to reflect their assessment on a seven-point Likert scale ranging from "Very inaccurate" through "Uncertain" to "Very accurate." Exemplary, the perceived changes in the job core dimension skill variety was assessed with the question "Since working from home, the job requires me to use more complex or high-level skills.". This modification is due to the lack of pre-pandemic data, which prevents a comparison. Hence, the

missing control group constrains modifying section two to a perceptual measurement of the changes within the job core dimensions. Identical with the original JDS format, each variable was measured in more than one way, once as a positively worded item and once in a reversed format. The reversed format is proven to reduce response bias (Swain et al., 2008). A mean score for each variable was computed by averaging several scores referring to one variable. This method results in seven variables reflecting the change of the job core dimensions since working from home.

Section three measures the critical psychological states experienced meaningfulness of the work, experienced responsibility for work outcomes, knowledge of results, and two measures of the "Affective responses to the job." Those are defined as "private, affective reactions or feelings an employee gets from working in his job" and can be distinguished into general satisfaction, internal work motivation, and specific satisfactions. Those variables reflect the third class of variables in the framework, "personal and work outcomes." Thus, section three intermixes measures for the critical psychological states and the personal and work outcomes general satisfaction and internal work motivation. General satisfaction reflects how satisfied an employee is with the job overall, whereas internal work motivation represents if an employee experiences positive internal feelings when working effectively and is therefore self-motivated. Contrary, poor performance in the job is linked to negative internal feelings (Hackman & Oldham, 1974). The scores for section three were obtained by asking respondents to indicate their agreement or disagreement with statements about their work experience. Contrary to sections one and two (job core dimensions), respondents were in section three asked to indicate how they personally feel and reflect their assessment on a seven-point Likert scale ranging from "Strongly disagree" through "Neutral" to "Strongly agree." Exemplary, experienced meaningfulness of work was measured with the statement: "The work I do on this job is very meaningful for me." Identical with the original JDS format, each variable was measured more than one way and at least once in a reversed format. A mean score for each variable was computed by averaging several scores referring to one variable. This method results in five variables reflecting the three critical psychological states and two measures reflecting the affective responses to the job.

Subsequent, section four measures the remaining affective responses to the job, which are specific satisfaction measures. The specific satisfactions include job security, pay and other compensation, peers and co-workers, supervision and opportunities for personal growth and development. Those measures all relate positively to the general satisfaction measure and reflect detailed measures for the third class of variables of the framework, "personal and work

outcomes." Respondents can assess their satisfaction levels for each statement on a seven-point Likert scale ranging from "Extremely dissatisfied" through "Neutral" to "Extremely satisfied." An example of measuring the specific security satisfaction is represented by the statement "The amount of security I have.". This section remained identical to the original JDS format, and each variable was measured more than one way. A mean score for each variable was computed by averaging several scores referring to one variable. This method results in five variables reflecting specific sub-scales for satisfaction.

Finally, section five of the questionnaire aims to measure employees' individual growth need strength. Individual growth need strength is predicted to be a moderator of the other relationships illustrated by the theory (Figure 1). According to theory, employees who have a strong desire for "growth" are more satisfied and motivated by complex, challenging, and "enriched" jobs. The original JDS provides two measures to obtain employees' growth need strength. The questionnaire used for this empirical analysis condensed it to one and used the "Would like" format, asking the respondents to state how much they would like to have the presented characteristics in their job. Contrary to the other sections, the seven-point Likert scale used ranged from 4 (= "Would like this one a moderate amount") through 7 (= Would like having this very much") to 10 (= Would like having this extremely much"). The presented statements are equivalent to the ones from the original JDS.

A detailed overview of the questionnaire and the related scoring key is available in the Appendix (B). Moreover, the demographic characteristics of the respondents are summarized in the Appendix (A).

4. Analysis

4.1. Pearson Correlations & Cronbach's Alpha Reliabilities

As previously described in chapter 3.4. Measures, most of the variables have been measured in more than one way and consequently need to be assessed regarding reliability of the set of scale. A well-recognized reliability coefficient is Cronbach's Alpha, which represents the internal consistency of items in a survey (Van Aelst & Christmann, 2005). However, many researchers claim that the coefficient is not representative for two-item scales (Verhoef, 2003; Sainfort & Booske, 2000). Therefore, Pearson correlations were calculated for two-item scales (Table 1) and Cronbach's Alphas were calculated for variables with more than two-item scales (Table 2). The Pearson correlations demonstrate that all items of the variables have a positive linear relationship. Nevertheless, it is important to notice, that the items of the variables Dealing with Others Change (.11), Skill Variety Change (.03) and Satisfaction Pay (.12) reveal a weak linear relationship which needs to be considered when interpreting results.

The optimal Cronbach's alpha is 0.7 and represents "acceptable" reliability (Taber, 2018; Zaahren Mohd Arof et al., 2018). According to theory, the data demonstrates that the variables Experienced Responsibility for Outcomes of Work (.61), Internal Motivation (.49) and Satisfaction Supervisory (.65) reflect an unacceptable reliability of the data (Zahreen Mohd Arof et al., 2018). Insufficient number of questions in the survey can be an explanation (Van Aelst & Christmann, 2005). These low values need to considered in the further course of analysis and interpretation.

Variable	n	Number of Items	Pearson Correlation
Dealing with Others Change	181	2	0.11
Autonomy Change	181	2	0.27
Task Identity Change	181	2	0.61
Skill Variety Change	181	2	0.03
Task Significance Change	181	2	0.49
Feedback Agent Change	181	2	0.47
Feedback Job Change	181	2	0.57
Experienced Meaningfulness of Work	181	2	0.25
Knowledge of Actual Results of Work Activites	181	2	0.44
Satisfaction Pay	181	2	0.12

Table 1: Pearson Correlation Reliability Results

Variable	n	Number of Items	Cronbach's Alpha
Experienced Responsibility for Outcomes of Work	181	4	0.61
Internal Motivation	181	3	0.49
Satisfaction General	181	3	0.70
Satisfaction Growth	181	4	0.84
Satisfaction Social	181	3	0.79
Satisfaction Supervisory	181	3	0.65
Growth Need Strength	181	5	0.76

Table 2: Cronbach's Alpha Reliability Results

4.2. Descriptive Statistics

The gathered data were statistically analyzed and interpreted using R-Studio (see Appendix). Summary descriptive statistics are shown in Table 3 and Pearson correlations in Table 4.

The objective assessment of the job core dimensions reflects an average of standard scores, so the means are all around 5 except for skill variety which has a lower mean of 3.18. These means indicate that, on average, jobs require to work closely with other people, autonomy, task identity, task significance, and feedback, whereas only skill variety is less pronounced in jobs. The means of the perceived changes in the job core dimensions since working from home represent that the introduction of home office influenced the job core dimensions. A mean of 4 is neutral in the scaling system and indicates that no deviation of the job core dimension is perceived by employees. Autonomy and skill variety show the highest means with 5.29 and 5.26, implying that employees perceive these two job core dimensions as more prominent since working from home. In contrast, the means of task identity change (3.34), task significance change (3.03), and feedback agent (3.20) imply that these job core dimensions suffered under the influence of working from home. Since autonomy directly affects the experienced responsibility for outcomes of work, it is consistent with the theory that the mean of this variable is also above average (5.13), indicating an increased perceived responsibility for the outcomes of work. Experienced meaningfulness of the work is only slightly above average (4.98), whereas the knowledge of actual results of work activities shows a substandard value (3.33). Means of the personal and work outcomes highlight that security satisfaction and social satisfactions suffered the most since working from home, which supports previous findings which refer missing personal exchange to feelings of isolation and consequently dissatisfaction (Cooper & Kurland, 2002; Yap & Tng, 1990). The decline of satisfaction security can be attributed to the rising job cuts due to the disruption of the economic (Lin et al., 2021). The job core dimensions autonomy and task identity are strongly positively correlated ($r = .72$). This correlation means that employees who feel independent in performing their job also show a higher responsibility for the completion of a whole identifiable piece of work (Hackman &

Oldham, 1974). Furthermore, a higher degree of perceived task significance since working from home is strongly positively correlated (r = .76) with an also higher perceived task identity since working from home. Contrary, a higher degree of required skill variety since working from home is negatively correlated with task identity, which is reflected by a correlation of r = -.53. Internal work motivation and general satisfaction are strongly positively correlated with experienced responsibility for outcomes of work which is represented by a correlation of r = .73 for both pairs (Table 3).

The variable Growth Need Strength does not show any strong correlations with the job core dimensions, the changes in the job core dimensions, or the critical psychological states. Therefore, this predicted moderator of the relationship (Figure 1) is not considered for the following analysis.

Job Core Dimensions	n	mean	sd	median	skew	kurtosis	se
Dealing with Others	181	5.19	1.22	5	-0.38	-0.66	0.09
Autonomy	181	5.34	1.33	5	-0.39	-0.74	0.10
Task Identity	181	5.47	1.30	6	-0.61	-0.54	0.10
Skill Variety	181	3.18	1.64	3	0.67	-0.36	0.12
Task Significance	181	5.12	1.25	5	-0.44	0.25	0.09
Feedback Agent	181	5.20	1.12	5	-0.15	-0.58	0.08
Feedback Job	181	5.32	1.20	5	-0.09	-0.71	0.09
Change in Job Core Dimensions	n	mean	sd	median	skew	kurtosis	se
Dealing with Others Change	181	5.10	1.01	5	-0.02	-0.77	0.08
Autonomy Change	181	5.29	1.02	5.5	-0.42	-0.21	0.08
Task Identity Change	181	3.34	1.50	3	0.41	-0.89	0.11
Skill Variety Change	181	5.26	0.95	5.5	-0.44	-0.18	0.07
Task Significance Change	181	3.03	1.25	3	0.40	-0.50	0.09
Feedback Agent Change	181	3.20	1.33	3	0.62	-0.09	0.10
Feedback Job Change	181	3.18	1.34	3	0.48	-0.69	0.10
Critical Psychological States	n	mean	sd	median	skew	kurtosis	se
Experienced Meaningfulness of Work	181	4.98	1.07	5	-0.18	-0.39	0.08
Experienced Responsibility for Outcomes of Work	181	5.13	0.91	5.25	-0.18	-0.63	0.07
Knowledge of Actual Results of Work Activities	181	3.33	1.31	3	0.34	-0.45	0.10
Personal and Work Outcomes	n	mean	sd	median	skew	kurtosis	se
Internal Motivation	181	5.04	0.91	5.00	-0.29	-0.46	0.07
Satisfaction General	181	4.98	1.13	5.00	-0.33	-0.41	0.08
Satisfaction Security	181	3.95	1.01	4.00	0.04	-0.04	0.07
Satisfaction Pay	181	4.02	1.02	4.00	0.00	0.30	0.08
Satisfaction Growth	181	5.08	1.09	5.25	-0.81	0.44	0.08
Satisfaction Social	181	3.39	1.24	3.33	0.44	-0.60	0.09
Satisfaction Supervisory	181	4.81	1.07	5.00	-0.42	-0.19	0.08

Table 3: Descriptive Statistics of Job Core Dimensions, Change in Job Core Dimensions, Critical Psychological States and Personal and Work Outcomes

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
(1) Dealing with Others																									
(2) Autonomy	0.61																								
(3) Task Identity	0.49	0.72																							
(4) Skill Variety	0.07	-0.17	-0.12																						
(5) Task Significance	0.42	0.50	0.41	-0.11																					
(6) Feedback Agents	0.44	0.47	0.44	-0.08	0.64																				
(7) Feedback Job	0.34	0.42	0.41	-0.06	0.66	0.57																			
(8) Change Dealing with Others	0.51	0.49	0.44	-0.35	0.39	0.43	0.33																		
(9) Change Autonomy	0.18	0.33	0.30	-0.32	0.29	0.28	0.28	0.48																	
(10) Change Task Identity	-0.25	-0.37	-0.40	0.61	-0.33	-0.30	-0.29	-0.51	-0.28																
(11) Change Skill Variety	0.43	0.45	0.43	-0.35	0.42	0.44	0.37	0.68	0.49	-0.53															
(12) Change Task Signifiance	-0.15	-0.30	-0.38	0.60	-0.34	-0.27	-0.30	-0.46	-0.41	0.76	-0.50														
(13) Change Feedback Agent	-0.25	-0.33	-0.37	0.63	-0.23	-0.18	-0.23	-0.54	-0.29	0.78	-0.45	0.70													
(14) Change Feedback Job	-0.27	-0.30	-0.40	-0.50	-0.35	-0.30	-0.28	-0.56	-0.29	0.74	-0.49	0.67	0.71												
(15) Experienced Meaningfullness of Results	0.23	0.20	0.17	0.07	0.22	0.23	0.26	0.30	0.24	-0.08	0.14	-0.09	0.02	-0.09											
(16) Experienced Responsibility for Outcomes of Work	0.33	0.37	0.42	-0.28	0.29	0.35	0.36	0.53	0.55	-0.44	0.50	-0.50	-0.42	-0.49	0.40										
(17) Knowledge of Actual Results of Work Activities	-0.12	-0.30	-0.38	0.59	-0.26	-0.22	-0.25	-0.42	-0.30	0.65	-0.43	0.64	0.67	0.60	-0.07	-0.51									
(18) Internal Work Motivation	0.28	0.39	0.41	-0.39	0.29	0.28	0.29	0.56	0.50	-0.51	0.53	-0.56	-0.46	-0.45	0.35	0.73	-0.59								
(19) Satisfaction General	0.49	0.43	0.44	-0.17	0.36	0.40	0.40	0.56	0.53	-0.37	0.48	-0.44	-0.34	-0.40	0.48	0.73	-0.31	0.62							
(20) Satisfaction Security	0.17	0.06	-0.04	0.37	-0.02	0.00	0.02	-0.04	-0.02	0.23	-0.11	0.24	0.28	0.19	0.13	-0.10	0.32	-0.15	0.04						
(21) Satisfaction Payment	0.07	0.05	-0.03	0.14	0.04	0.04	0.07	-0.09	0.05	0.11	-0.09	0.12	0.17	0.11	0.19	0.01	0.14	0.00	0.09	0.61					
(22) Satisfaction Growth	0.42	0.42	0.43	-0.21	0.25	0.31	0.33	0.43	0.41	-0.36	0.37	-0.43	-0.33	-0.43	0.25	0.64	-0.32	0.58	0.59	0.10	0.21				
(23) Satisfaction Social	0.05	-0.15	-0.23	0.51	-0.07	-0.01	-0.04	-0.28	-0.19	0.48	-0.28	0.47	0.55	0.44	0.10	-0.36	0.55	-0.36	-0.19	0.59	0.51	-0.17			
(24) Satisfaction Supervisory	0.36	0.38	0.33	-0.11	0.19	0.29	0.31	0.42	0.37	-0.30	0.31	-0.35	-0.27	-0.40	0.24	0.49	-0.24	0.40	0.51	0.13	0.18	0.79	-0.03		
(25) Growth Need Strength	0.15	0.06	0.09	0.29	0.06	0.11	0.12	0.07	0.17	0.11	0.10	0.07	0.11	0.03	0.18	0.16	0.16	0.05	0.21	0.18	0.06	0.27	0.20	0.25	

Table 4: Pearson Correlations - Job core dimensions, changes job core dimensions, critical psychological states and personal and work outcomes

4.3. Multiple Regression Analysis

In order to test which job core dimension affects the QWL, a multiple regression analysis was performed. For that purpose, the key assumptions related to multiple linear regression analysis were tested upfront. The assessment of the objective job core dimensions served as independent variables and general satisfaction represents the QWL in the context of this dissertation.

```
Call:
lm(formula = satisfactionGeneral ~ as.matrix(coreDimensions))

Residuals:
     Min       1Q   Median       3Q      Max
-2.48727 -0.63145 -0.01839  0.63713  2.66712

Coefficients:
                                    Estimate Std. Error t value Pr(>|t|)
(Intercept)                          1.72322    0.43006   4.007 9.13e-05 ***
as.matrix(coreDimensions)dwo         0.32658    0.07460   4.378 2.07e-05 ***
as.matrix(coreDimensions)autonomy   -0.03085    0.08578  -0.360   0.7196
as.matrix(coreDimensions)taskID      0.15217    0.07738   1.967   0.0508 .
as.matrix(coreDimensions)skillVar   -0.11047    0.04348  -2.541   0.0119 *
as.matrix(coreDimensions)taskSig    -0.04089    0.08315  -0.492   0.6235
as.matrix(coreDimensions)feedbackAgent  0.08898    0.08527   1.043   0.2982
as.matrix(coreDimensions)feedbackJob    0.18638    0.07957   2.342   0.0203 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9188 on 173 degrees of freedom
Multiple R-squared:  0.3626,    Adjusted R-squared:  0.3368
F-statistic: 14.06 on 7 and 173 DF,  p-value: 2.208e-14
```

Table 5: Multiple Regression Analysis

The multiple regression demonstrates that the job core dimensions dealing with others, skill variety and feedback of the job itself have a significant effect on general satisfaction, whereas the other job core dimensions are not significant at the .05 level. An increase of the job core dimension dealing with others by one point on a seven-point Likert scale is associated with an increase of .33 points of general satisfaction. An increase of the job core dimension skill variety by one point on a seven-point Likert scale is associated with a decline of -.11 points of general satisfaction. An increase of the job core dimension feedback of job by one point on a seven-point Likert scale is associated with an increase of .19 points of general satisfaction. Those results are all significant at the .05 level. The R-squared of the model (.36) indicates that 36% of the data fit the model. Even though, the multiple regression yields significant results about the influence of specific job core dimensions on the QWL, the original theory (Figure 1) states that the relationship is mediated by the critical psychological states. Therefore it’s essential to investigate the relationship more comprehensively.

4.4. Mediation Analyses

In order make inferences about the effects of home office on the QWL, it's crucial to test the applicability of the original model of Hackman and Oldham (Figure 1) in nowadays times of a global pandemic. Therefore, mediation analyses were performed investigating the mediating effect of job core dimensions, critical psychological states, and personal and work outcomes. The mediation analyses were run using the PROCESS for R Version 4.0.1. written by Hayes (2012) (see Appendix). The mediation analysis aims to estimate the causal effects of a treatment by analyzing the relationship between an independent variable, a dependent variable, and a mediator (Tingley et al.). A confirmed mediating effect of job core dimensions, critical psychological states, and personal and work outcomes allows drawing conclusions about the influence of home office (changes in job core dimensions) on the QWL (represented by personal and work outcomes). In sum, three mediation analyses were conducted, capturing each of the relationships between the job core dimensions (objective assessment; section one of survey), the respective critical psychological state, and the personal and work outcomes. In order to simplify the analysis, personal and work outcomes were condensed down to one variable, general satisfaction, representing the QWL in the context of this dissertation. General satisfaction is positively correlated with high internal work motivation (.62) and is consequently suitable to represent both outcomes (Table 4).

The first mediation analysis focuses on the relationship between the job core dimensions skill variety, task identity, and task significance, the critical psychological state experienced meaningfulness of the work, and the personal and work outcome general satisfaction (Figure 2). In order to simplify the analysis, the three job core dimensions were consolidated by averaging the scores. Since data for the job core dimensions were identically collected, averaging the scales was possible. Firstly, the direct effect of the independent variable (average of skill variety, task identity, and task significance) on the dependent variable (general satisfaction) was estimated with a regression model. For this purpose, the linearity condition of the two variables was initially tested to ensure that there is an effect that may be mediated. The regression model yields a positive significant direct effect (c'= .27, p= .00). As a second step, the relationship of the independent variable on the mediator (experienced meaningfulness of work) was analyzed using a regression model. This model yields a significant positive effect of the independent variable onto the mediator and slope estimate (a= .32, p= .00). Lastly, a regression of the independent variable and the mediator onto the dependent variable was used to test if the mediator affects the dependent variable while controlling for the independent

variable. The mediator (experienced meaningfulness of the work) has a positive significant effect (b= .45, p= .00).

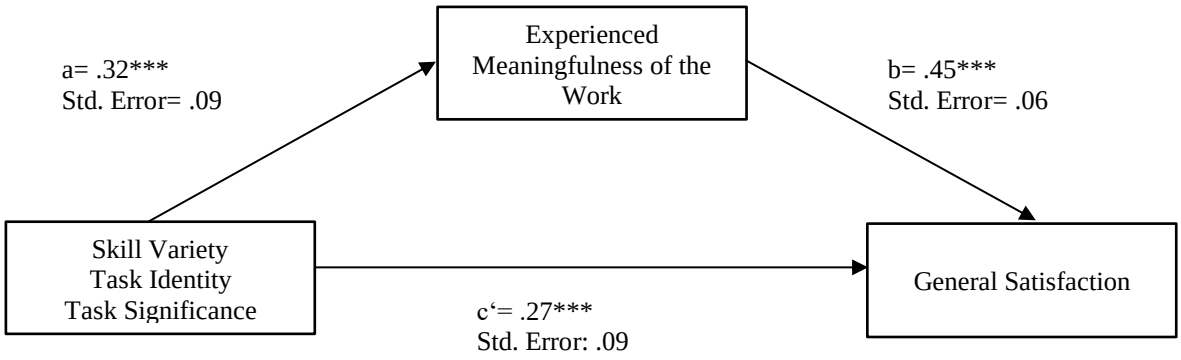


Figure 2: Mediation Analysis 1 - skill variety, task identity, task significance, experienced meaningfulness of the work and general satisfaction

The effect of skill variety, task identity, and task significance on general satisfaction was partially mediated via the experienced meaningfulness of the work. As Figure 2 illustrates, the regression coefficient between skill variety, task identity, task significance, and general satisfaction, and the regression coefficient between experienced meaningfulness of the work and general satisfaction was significant. Finally, the Sobel test by Michael Sobel (1982) was used to show whether the mediated effect exists by testing whether the indirect effect of the independent variable on the dependent variable via the mediator is significantly different from zero. The underlying Sobel test equation is the following:

$$z = \frac{ab}{\sqrt{b^2 s_a^2 + a^2 s_b^2}}$$

The Sobel test yields a z-score of 3.02, p= .00, which is greater than 1.96. Consequently, the mediation effect can be interpreted to be statistically significant at the .05 level (MacKinnon et al., 2002).

The second mediation analysis focuses on the relationship between the job core dimension autonomy, the critical psychological state experienced responsibility for the outcomes of the work, and the personal and work outcome general satisfaction (Figure 3). Firstly, the direct effect of the independent variable (autonomy) on the dependent variable (general satisfaction) was estimated with a regression model. For this purpose, the linearity condition of the two variables was initially tested to ensure that there is an effect that may be mediated. The

regression model yields a positive significant direct effect (c'= .17, p= .00). As a second step, the relationship of the independent variable on the mediator (experienced responsibility for the outcomes of the work) was analyzed using a regression model. This model yields a significant positive effect of the independent variable onto the mediator (a= .25, p= .00). Lastly, a regression of the independent variable and the mediator onto the dependent variable was used to test if the mediator affects the dependent variable while controlling for the independent variable. The mediator (experienced responsibility for the work outcomes) has a positive significant effect (b= .82, p= .00).

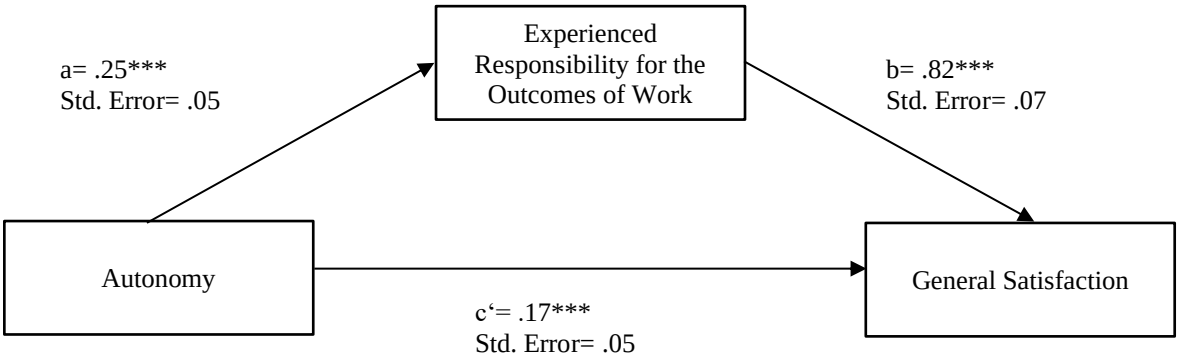


Figure 3: Mediation Analysis 2 - autonomy, experienced responsibility for the outcomes of the work and general satisfaction

The effect of autonomy on general satisfaction was partially mediated via the experienced responsibility for the outcomes of the work. As Figure 3 illustrates, the regression coefficient between autonomy and general satisfaction and the regression coefficient between experienced responsibility for the outcomes of the work and general satisfaction was significant. Finally, the Sobel test yields a z-score of 4.96, p= .04. Consequently, the mediation effect can be interpreted to be statistically significant at the .05 level (MacKinnon et al., 2002).

The third mediation analysis focuses on the relationship between the job core dimension feedback, the critical psychological state knowledge of the actual results of work activities and the personal and work outcome general satisfaction (Figure 4). Since the data collection procedure contained two measures for feedback, feedback of agents and feedback from job itself, the average of the two variables was used for feedback. Firstly, the direct effect of the independent variable (feedback) on the dependent variable (general satisfaction) was estimated with a regression model. The regression model yields a significant positive direct effect

(c'= .44, p= .00). As a second step, the relationship of the independent variable on the mediator (knowledge of the actual results of the work activities) was analyzed using a regression model. This model yields a negative significant effect of the independent variable onto the mediator (a= - .34, p= .00) . This means that feedback is associated with decreased knowledge of the actual results of the work. Lastly, a regression of the independent variable and the mediator onto the dependent variable was used to test if the mediator affects the dependent variable while controlling for the independent variable. The mediator (knowledge of the actual results of the work activities) has a negative significant effect (b= - .18, p= .00).

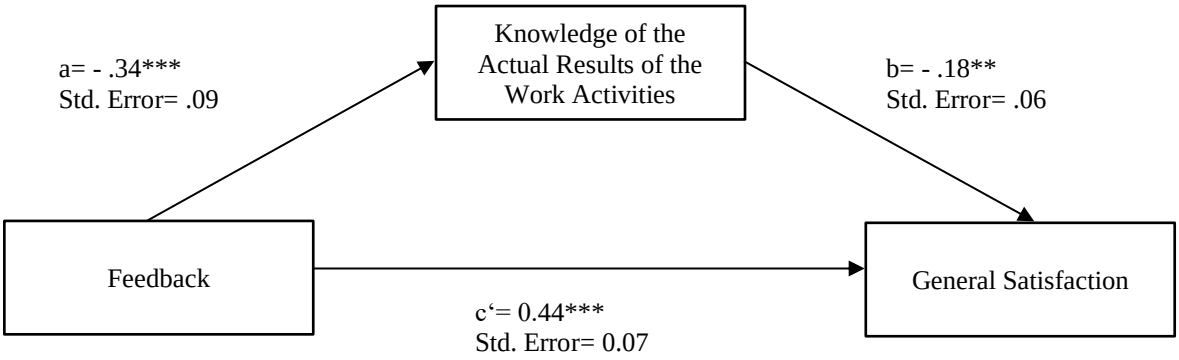


Figure 4: Mediation Analysis 3 - feedback, knowledge of the actual results of the work activities and general satisfaction

The effect of feedback on general satisfaction was partially mediated via the knowledge of the actual results of the work activities. As Figure 4 illustrates, the regression coefficient between feedback and general satisfaction and the regression coefficient between knowledge of the actual results of the work activities and general satisfaction was significant. Finally, the Sobel test (1982) yields a z-score of 2.35, p= .03. Consequently, the mediation effect can be interpreted to be statistically significant at the .05 level (MacKinnon et al., 2002).

Summarized, the original framework of Hackman and Oldham (1974) was tested in times of a global pandemic with three independent mediation analyses. The mediation analyses confirmed the relationship between the job core dimensions and the personal and work outcomes and the mediating effect of all the critical psychological states. The analyses verified the original framework except for one exception. Contradictory to the original theory, the results imply that feedback is affecting the knowledge of the actual results of work activities negatively. Also, the critical psychological state knowledge of the actual results of work is affecting satisfaction

negatively. However, the analysis still confirmed that feedback and satisfaction are mediated by the knowledge of the actual results of the work. Thus, overall, any changes in the job core dimensions also affect the critical psychological states and finally the personal and work outcomes (here referred to as general satisfaction).

The mediation analyses confirmed the applicability of the original theory of Hackman and Oldham (Figure 1). Therefore, any changes of the job core dimensions allow to make inferences about the QWL (here referred to as general satisfaction).

4.5. One-Sample T-Test

Finally, after investigating the direct relationship of the job core dimensions on general satisfaction and the mediating effect by the critical psychological states, this part of the analysis aims to investigate the changes of the job core dimensions in order to make inferences about the QWL.

The changes of the job core dimensions were tested by performing a one-sample t-test for each of the five job core dimensions by comparing the sample's mean to a predefined value. The predefined value is 4 since it indicates a neutral statement, and any deviations above or below indicate a change in the perception of the job core dimension (One Sample T-Tests, 2021). For this purpose, it was initially tested if the data violates any assumptions underlying the t-test. Moreover, the t-tests were performed using a confidence interval of 95%.

Respondents reported increased demand for skill variety (M= 1.25, SD= .94) since working from home, t(180)= 17.88, p= .00. Contrary, respondents reported decreased task identity (M= - .66, SD= 1.49) since working from home, t(180) = -5.92, p = .00. Regarding changes in the core job dimension task significance, respondents reported decreased task significance (M= -.96, SD= 1.25) since working from home (180)= -10.43, p = .00. The job core dimension autonomy was reported by respondents as increased (M= 1.29, SD= 1.02) since working from home, t(180) = 16.98, p = .00. Since feedback was assessed with two different measures, the change in the core job dimension feedback was analyzed by two separate t-tests. Respondents reported decreased feedback from agents (M= - .80, SD= 1.33) since working from home, t(180)= - 8.13, p= .00. Moreover, respondents also reported decreased feedback from the job itself (M= - .82, SD= 1.34) since working from home t(180)= - 8.28, p= .00. Thus, feedback decreased for both measures since working from home. In sum, the data supported the hypothesized changes of all the job core dimensions.

The performed one-sample t-tests support the stated hypothesis 1 – 5. Indeed, the job core dimensions skill variety and autonomy increased since working from home. In contrast, the job core dimensions task identity, task significance and feedback decreased since working from home. The job core dimension feedback decreases for both measures of feedback (feedback from agent and feedback from job). Ultimately, home office affects the job core dimensions differently and consequently also the critical psychological states. Applying the changes of the job core dimensions to the examined framework of theory, it is to conclude that the changes of the job core dimensions skill variety, autonomy, and feedback contribute to increase general satisfaction. In contrast, the changes in the job core dimensions task identity and task significance affect general satisfaction negatively. Based on the present results, it is to infer that the changes of the job core dimensions predominantly affect general satisfaction positively. Two out of three critical psychological states are expected to increase due to the changes of the job core dimensions. The confirmed mediation by the critical psychological states allows drawing inferences about the effect on general satisfaction. Since general satisfaction represents the QWL in the context of this dissertation, it is to conclude that the QWL increases by the introduction of home office as a common way of working. Thus, hypothesis 6 is not supported by the conducted analysis.

5. Discussion

The results demonstrate that the implementation of home office has an effect on the job and is reflected in changes in the job core dimensions. According to the conducted analysis and the results, it is to infer that the QWL is likely to increase with the implementation of home office. Nevertheless, the following discussion aims to challenge the plausibility of the results.

Consistent with prior research, the results support that home office is accompanied by increased autonomy since employees are less supervised at home. This autonomy allows employees to schedule and structure their work activities independently, which increases their experienced responsibility for the work outcomes. The results prove that autonomy is associated with increased experienced responsibility for work outcomes. The analysis verified the mediation of autonomy and satisfaction by the critical psychological state experienced responsibility for work outcomes. Consequently, the present study identifies increased autonomy as the most important contributor to increased QWL since working from home.

According to the results, the job core dimension skill variety is the second most affected by the implementation of home office (mean= 5.26). Employees state an increased need for the usage of different skills and talents in order to perform their job since working from home. The increased demand for skill variety can be explained from two perspectives. First, the new digital work practices force employees to adapt to new technologies which require new skills (Bresnahan et al., 2002; Papagiannidis & Marikyan, 2020). This perspective is linked to increased skill variety in general and not explicitly tied to one's particular job. It remains unclear how long this adaption will take and at which point employees will perceive remote working as a common way of working. Second, the previously outlined increased autonomous working might force employees to upskill instead of relying on co-workers. This perspective is linked to increased skill variety specifically tied to one's particular job. The assumption is also supported by a positive correlation of these two variables (.49). Contrary to skill variety, employees stated decreased task identity and task significance since working from home. Consistent with prior research and the theory, the analysis verified that the job core dimensions skill variety, task identity, and task significance are associated with increased meaningfulness of the work, which leads to higher satisfaction. However, it is important to note that present evidence relies on a cumulative variable of the three job core dimensions, limiting the explanatory power for each job core dimension. The approach utilized suffers from the limitation that the emphasis of the job core dimension for each individual employee is unknown and consequently not incorporated. Since the original approach weights each job core

dimension equally, this assumption is adapted to the context of this dissertation. Two job core dimensions affect experienced meaningfulness of the work negatively, whereas only one job core dimension has a positive effect. The negative development of the experienced meaningfulness of the work can be attributable to the reduction of social interactions due to social distancing measures. Prior research has already argued that social interaction is vital for an individual's well-being (Ishii-Kuntz, 1990). Moreover, the negative development of experienced meaningfulness of the work might also be emphasized by the fact that the global pandemic accentuates topics like health, social connection, and well-being. Possibly, global concerns about health shifted the focus of employees to be more aware of those topics and to reevaluate the relevance of their job in this context (Okabe-Miyamoto & Lyubomirsky, 2021). Finally, the job core dimension feedback was captured as feedback from agents and feedback from job itself. Since working from home, both feedback measures decreased. The decline in feedback from agents can be explained by the lack of social interactions, which reduced indirect and direct feedback (Yap & Tng, 1990). Especially digital tools lack the ability to transfer emotional and nonverbal aspects, which negatively affects the relationship between employees and agents' feedback (Richter, 2020). It is important to note that the two feedback variables were merged into one feedback variable in order to perform the mediation analysis. In line with previously outlined limitations, the explanatory power of the specific feedback variables is limited. The results imply that feedback is associated with decreased knowledge of the actual results of the work. Furthermore, the results also imply that knowledge of the actual results of the work is affecting satisfaction negatively. The mediation of feedback and satisfaction by the knowledge of the actual results of work was confirmed. The negative linear relationships of the variables stand in contrast to the original theory of Hackman and Oldham (1974), which states that feedback is associated with increased knowledge of the actual work results and finally leads to increased satisfaction. The conflicting results could be biased by the chosen measurement approach. The perceptual measurement of objective and subjective assessment of the job does not ensure that employees were not impaired by the current situation of the pandemic and the associated home office. The findings suggest that feedback was either not provided at all during the initial phase of home office or not efficiently, which could explain the negative association of knowledge of the actual results of work. Social and non-verbal feedback cues of face-to-face communication could possibly not be transferred to digital communication and cause misunderstandings in communication and feedback (Gibson et al., 2003). By investigating the results of previous studies, it can be reasoned that the relationship is generally positive, and feedback is associated with increased satisfaction (Hackman & Oldham; 1974, Jawahar, 2006;

Azmat & Iriberri, 2015). Therefore, there are reasons to doubt the antagonistic relationship in the light of the global pandemic and present an objective for further research. Assuming a positive relationship, the change of the job core dimension feedback (both feedback measures) would affect satisfaction negatively. Consequently, general satisfaction would decrease by changes in task identity, task significance, and feedback, whereas autonomy and skill variety would increase satisfaction. Based on this assumption, it is to infer that general satisfaction decreased since working from home. Hypothesis 6 would be confirmed: Working at home influences the QWL negatively.

Overall, the presented results are all significant and confirm that satisfaction is also during home office mediated by critical psychological states, which are dependent on the job core dimensions. This rationale offers the possibility of analyzing how satisfied employees are currently with their job from a managerial perspective. Furthermore, the instrument provides insights into the specific job core dimensions and offers managers the possibility to intervene with job redesign techniques to increase satisfaction (Umstot et al., 1976).

6. Limitations and Future Research

The empirical results of this dissertation should be considered in light of some limitations. First of all, the JDS as a perceptual measurement tool suffers from limitations that could impair the validity of the results. Results of the JDS are readily manipulable, which presupposes a degree of trust between respondents and the individual using the results. The assessment of the employees should accurately reflect their objective and subjective assessment of their job and their personal reactions to them. Even though respondents were adverted to reflect their assessment as accurately as possible, the instrument cannot ensure the accuracy of the data. Furthermore, missing pre-pandemic data inhibits the availability of a control group. Therefore, section two of the original JDS was modified to capture perceptual measurements of the job core dimension changes since the implementation of home office. This part of the questionnaire suffers from the same limitation associated with the accuracy of the JDS. However, perceptual measurements serve as starting point to gain empirical insights about job changes and the associated personal reactions.

Regarding the reliability of the data, Pearson correlations and Cronbach's Alpha revealed that some items on the scales were not high in consistency and therefore might not be that effective in representing the actual changes since working from home or related satisfaction measures. Those variables are primarily Dealing with Others Change, Skill Variety Change, Satisfaction Pay, Experienced Responsibility for Outcomes of Work, Internal Motivation and Satisfaction Supervisory. The reliability results imply a requirement for a new dataset collection in order to increase reliability of the data. Furthermore, it is also worth considering to test the effectiveness of the questions included in the original JDS representing the variables. A higher degree of reliability could be achieved by modifying the original JDS regarding the number and relevance of questions per variable.

Beyond that, further research is necessary to investigate the long-term effects of home office on QWL after some time to adapt to the new common way of working. This adaption might include the installation of an appropriate home office or the proficiency to use technology and digital tools efficiently in order to facilitate work. This investigation would also be insightful to analyze the final satisfaction-productivity relationship. There is controversial evidence about the dependency of these two variables (Bloom et al., 2014; Choudhury and Foroughi, 2020; Umstot et al., 1976). The results of this dissertation provide insights for practical relevance, which need to be tested for effectiveness. From a managerial perspective, it is valuable to mitigate the identified negative effects of home office with job redesign techniques. In order to

capture the effectiveness of these interventions, the personal and work outcomes should be reflected by additional variables of the original theory (Hackman & Oldham, 1974). The time-restricted context of this dissertation did not allow to include measures regarding absenteeism and turnover, which are proven to be indicators for satisfaction and productivity (Porter et al., 1975; Huselid, 1995).

Lastly, the presented research did not test the moderating effect of growth need strength, stating how much an individual desires growth and consequently seeks challenging and enriched jobs. Further research is needed to test if the predicted moderating effect of growth need strength is valid in times of a pandemic and home office. Moreover, as previous research already highlighted, the effects of home office highly depend on individual characteristics and circumstances of life, which naturally limits the generalisability of the results (Shamir & Salomon, 1985; Hackman & Oldham, 1974).

7. Conclusion

The objective of this dissertation was to analyze the effects of home office on the QWL of employees in terms of a global pandemic. The theoretical framework and the associated methodical approach of Hackman and Oldham (1974) served as a guideline. The analyses provide evidence that jobs are generally affected by the implementation of home office. The job core dimensions autonomy and skill variety increased since working from home. In contrast, the job core dimensions task identity, task significance, and feedback decreased since working from home. The proposed framework was confirmed in the context of a global pandemic and proves that the job core dimensions affect satisfaction and are mediated by critical psychological states. Conducted analyses provide evidence for the positive correlations of the job core dimensions, the respective critical psychological state, and satisfaction except for the relationship of feedback. However, the negative correlation of feedback and satisfaction, mediated by knowledge of the actual work results, is subject to further research and is to be critically scrutinized in the present study. Assuming a positive relationship, consistent with the original theory, the presented changes of the job core dimensions would affect satisfaction negatively. It is to infer that the implementation of home office influences satisfaction negatively. However, it is questionable if the change of each job core dimension weighs equally for individuals and affects satisfaction identically. This evaluation remains a subject for further research. Since the variable general satisfaction represents QWL in the context of this dissertation, it is to conclude that working from home influences the QWL negatively in terms of a global pandemic.

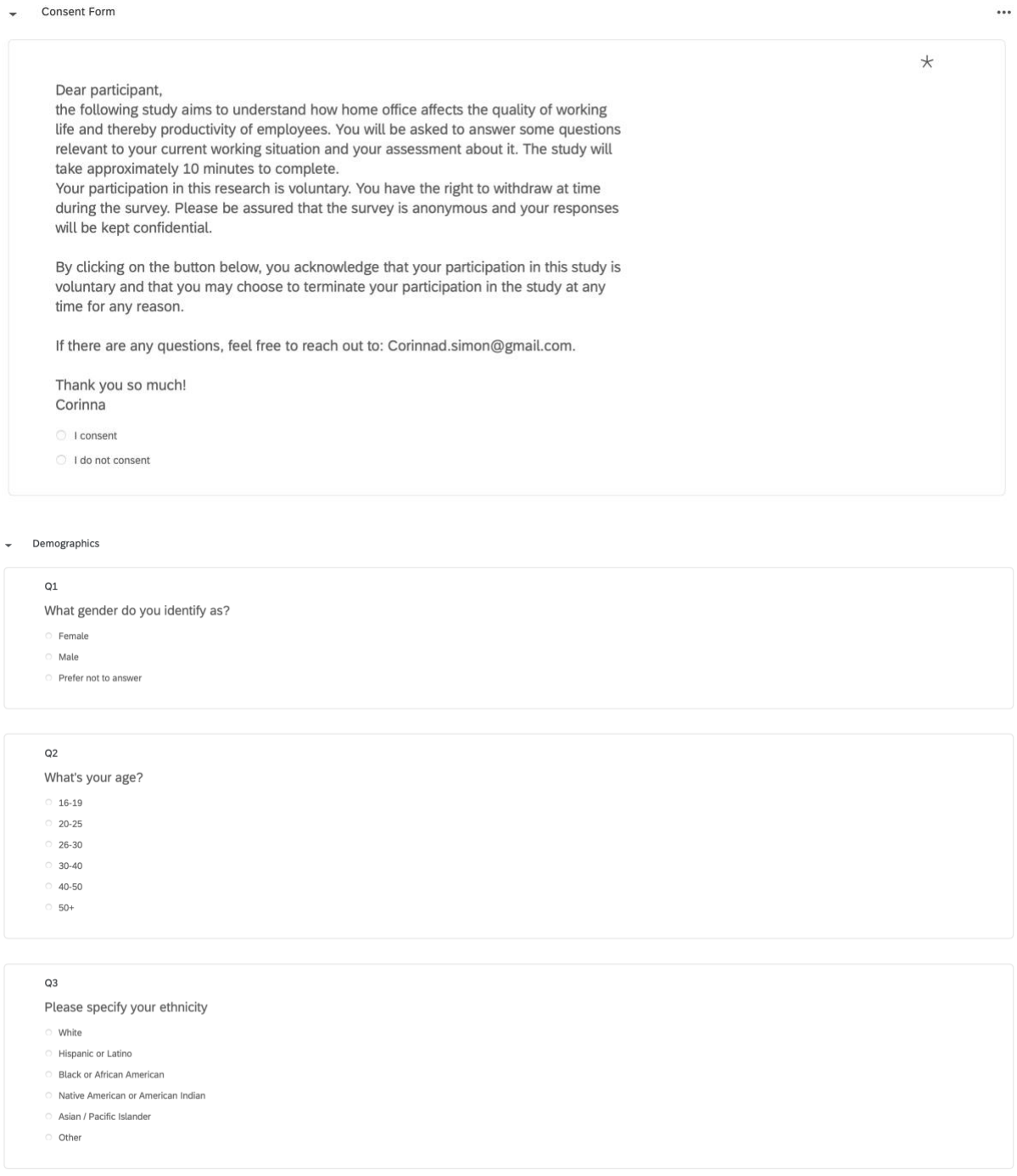
In summary, the study provides relevant insights about the effects of home office and presents a validated approach for managers to analyze employees' satisfaction with respect to home office. The dedicated identification of negative effects allows from a managerial perspective to intervene with job redesign measures. The reevaluation of employee satisfaction allows assessing the suitability of home office for an individual company in the long run.

8. Appendix

A) Demographic Characteristics of the Sample

Gender	Female: 53 Male: 128
Age	20-25: 9 26-30: 58 30-40: 59 40-50: 26 50+: 29
Ethnicity	Asian/ Pacific Islander: 5 Black or African American: 3 Hispanic or Latino: 13 Native American: 3 White: 157
Country of Origin	France: 3 Germany: 134 Middle-East: 5 Portugal: 21 Spain: 4 UK: 1 US: 13
Country	France: 2 Germany: 135 Middle-East: 2 Portugal: 21 Spain: 2 UK: 6 US: 13
Education	Did not complete High School: 1 Bachelor's Degree: 57 Doctorate Degree: 38 High School Degree: 8 Master's Degree: 73 Professional Degree: 4
Employment	Employed Full-Time: 145 Employed Part-Time: 23 Seeking Opportunities: 6
Living Situation	Alone: 41 With spouse/ partner: 85 With friend/s: 53 Prefer not to answer: 1 Other: 1
Children	1: 62 2-4: 28 More than 4: 11 None: 78

B) Survey and Scoring Key



Consent Form

Dear participant,
the following study aims to understand how home office affects the quality of working life and thereby productivity of employees. You will be asked to answer some questions relevant to your current working situation and your assessment about it. The study will take approximately 10 minutes to complete.
Your participation in this research is voluntary. You have the right to withdraw at time during the survey. Please be assured that the survey is anonymous and your responses will be kept confidential.

By clicking on the button below, you acknowledge that your participation in this study is voluntary and that you may choose to terminate your participation in the study at any time for any reason.

If there are any questions, feel free to reach out to: Corinnad.simon@gmail.com.

Thank you so much!
Corinna

- I consent
- I do not consent

Demographics

Q1
What gender do you identify as?
- Female
- Male
- Prefer not to answer

Q2
What's your age?
- 16-19
- 20-25
- 26-30
- 30-40
- 40-50
- 50+

Q3
Please specify your ethnicity
- White
- Hispanic or Latino
- Black or African American
- Native American or American Indian
- Asian / Pacific Islander
- Other

Q4

Where are you from?

- Portugal
- France
- Spain
- Germany
- US
- UK
- Middle-East
- Other

Q5

Where do you currently live?

- Germany
- Portugal
- US
- UK
- France
- Italy
- Spain
- Middle-East
- Other

Q6

What is the highest level of education you have completed?

- Did not complete High School
- High School degree
- Bachelor's degree
- Master's degree
- Professional degree
- Doctorate degree
- Prefer not to answer

Q7

What's your current employment status?

- Employed Full-Time
- Employed Part-Time
- Seeking opportunities
- Retired
- Prefer not to answer

Q8

How is your living situation?

- Alone
- With spouse/ partner
- With friend/s
- Prefer not to answer
- Other

Q9

How many children do you have?

- None
- 1
- 2-4
- More than 4
- Prefer not to answer

Home Office vs. Office

Q10

What describes your working situation best prior to lockdown?

- Full-time at office
- Full-time at office and/or client
- Full-time working from home
- Flexible between home office and office
- Other

Q11

What describes your working situation best right now?

- Full-time at the office
- Full-time at the office and/or client
- Full-time working from home
- Flexible between home office and office
- Other

Q12

Which working model would be your preferred one?

- Full-time at the office
- Full-time at the office and/or client
- Full-time working from home
- Flexible between home office and office
- Other

Section 1: Job Dimensions (7x)

Q13

This part of the questionnaire asks you to describe your job, as objectively as you can. Please try to make your descriptions as accurate and objective as you can.

	Very little	2	3	Moderately	5	6	Very much
1) To what extent does your job require you to work closely with other people? (either clients, or people in related jobs in your organization)?							
2) How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?							
3) To what extent does your job involve doing a "whole" and identifiable piece of work?							
4) How much variety is there in your job? Does is require using a variety of skills and talents?							
5) In general, how significant or important is your job? (The extent to which your job affects lives and well-being of other people)							
6) To what extent do managers or co-workers let you know how well you are doing on your job?							
7) To what extent does doing the job itself provide you with information about your work performance?							

Section 2: Job Dimensions personally PRE & POST Pandemic (14x)

Q14

Compared to your expectations before COVID-19 (in 2019) how has working from home changed your job? Please indicate whether each statement is an accurate or an inaccurate description of your job perception comparing office and home-office. Please try to be as objectively as possible.

	Very inaccurate	Mostly inaccurate	Slightly inaccurate	Uncertain	Slightly accurate	Mostly accurate	Very accurate
1) Since working from home, the job requires me to use more complex or high-level skills.							
2) Since working from home, the job requires more cooperative work with other people.							
3) Since working from home, the job does NOT offer me the chance to do an entire piece of work from beginning to end.							
4) Since working from home, doing my job remotely offers me less chances to figure out how well I am doing.							
5) Since working from home, the job feels more simple and repetitive.							
6) Since working from home, I feel more that the job can be done adequately by a person alone - without talking or checking with other people.							
7) Since working form home, the supervisors and co-workers give me less "feedback" how well I am doing in my job.							
8) Since working from home, I perceive this job as more important and that a lot of people can be affected by how well the work gets done.							
9) Since working from home, the job denies me any chance to use my personal initiative or judgement in carrying out the work.							
10) Since working from home, supervisors let me know more often how well they think I am performing the job.							
11) Since working from home, the job offers me more of a chance to completely finish the pieces of work I begin.							
12) Since working from home, the job itself provides me less clues about whether or not I am performing well.							
13) Since working from home, the job gives me more considerable opportunity for independence and freedom in how I do the work.							
14) Since working from home, I perceive the job even less significant or important in the broader scheme of things.							

Section 3: Critical Psychological States

Q15

Now please indicate how you personally feel about your job in the current situation. Please indicate how much you agree or disagree with the statements below.

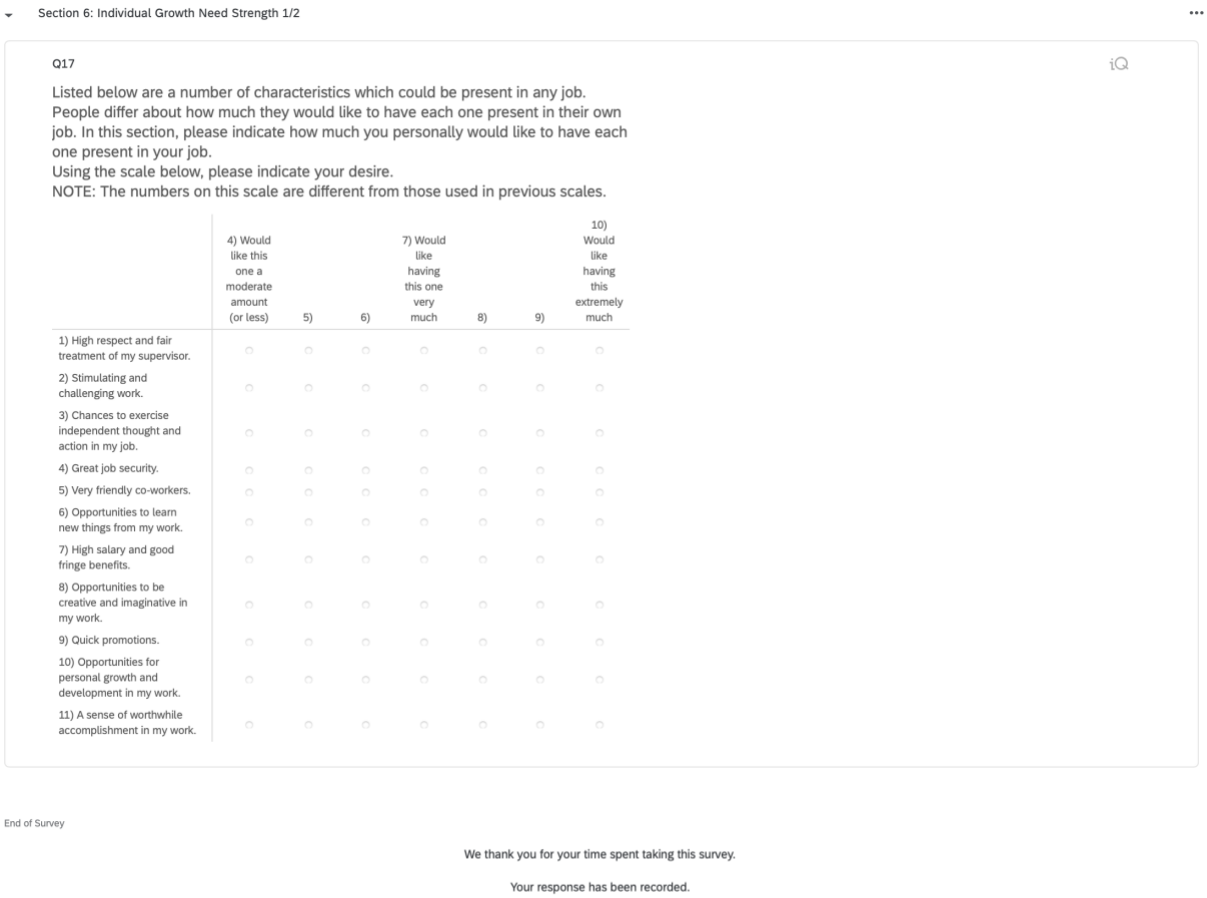
	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
1) It's hard for me to care very much whether or not the work gets done right.							
2) My opinion of myself goes up when I do this job well.							
3) Generally speaking, I am very satisfied with this job.							
4) Most of the things I have to do on this job seem useless or trivial.							
5) I usually know whether or not my work is satisfactory on this job.							
6) I feel a great sense of personal satisfaction when I do this job well.							
7) The work I do on this job is very meaningful for me.							
8) I feel a very high degree of personal responsibility for the work I do on this job.							
9) I frequently think of quitting this job.							
10) I feel bad and unhappy when I discover that I have performed poorly on this job.							
11) I often have trouble figuring out whether I am doing well or poorly on this job.							
12) I feel I should personally take the credit or blame for the results of my work on this job.							
13) I am generally satisfied with the kind of work I do in this job.							
14) My own feelings are generally not affected much one way or the other by how well I do on this job.							
15) Whether or not this job gets done right is clearly my responsibility.							

Section 4: Affective Reactions (Satisfaction)

Q16

Now please indicate how satisfied you are currently with each aspect of your job listed below. Please indicate how much you agree or disagree with the statements below.

	Extremely dissatisfied	Dissatisfied	Slightly dissatisfied	Neutral	Slightly satisfied	Satisfied	Extremely satisfied
1) The amount of security I have.							
2) The amount of pay and fringe benefits I receive.							
3) The amount of personal growth and development I get in doing my job.							
4) The people I talk to and work with on my job.							
5) The degree of respect and fair treatment I receive from my boss.							
6) The feeling of worthwhile accomplishment I get from doing my job.							
7) The chance to get to know other people while on the job.							
8) The amount of support and guidance I receive from my supervisor.							
9) The degree to which I am fairly paid for what I contribute to this organization.							
10) The amount of independent thought and action I can exercise in my job.							
11) How secure things look for me in the future in this organization.							
12) The chance to help other people while at work.							
13) The amount of challenge in my job.							
14) The overall quality of the supervision I receive in my job.							



Section 6: Individual Growth Need Strength 1/2

Q17

Listed below are a number of characteristics which could be present in any job. People differ about how much they would like to have each one present in their own job. In this section, please indicate how much you personally would like to have each one present in your job.
Using the scale below, please indicate your desire.
NOTE: The numbers on this scale are different from those used in previous scales.

	4) Would like this one a moderate amount (or less)	5)	6)	7) Would like having this one very much	8)	9)	10) Would like having this extremely much
1) High respect and fair treatment of my supervisor.							
2) Stimulating and challenging work.							
3) Chances to exercise independent thought and action in my job.							
4) Great job security.							
5) Very friendly co-workers.							
6) Opportunities to learn new things from my work.							
7) High salary and good fringe benefits.							
8) Opportunities to be creative and imaginative in my work.							
9) Quick promotions.							
10) Opportunities for personal growth and development in my work.							
11) A sense of worthwhile accomplishment in my work.							

End of Survey

We thank you for your time spent taking this survey.

Your response has been recorded.

Scoring Key – Survey & Variables

Variable	**Questions & Items**
Dealing with others	Q13, 1)
Autonomy	Q13, 2)
Task Identity	Q13, 3)
Skill Variety	Q13, 4)
Task Significance	Q13, 5)
Feedback Agent	Q13, 6)
Feedback Job	Q13, 7)
Dealing with Others Change	Q14, 1) Q14, 6)
Autonomy Change	Q14, 9) Q14, 13)
Task Identity Change	Q14, 3) Q14, 11)
Skill Variety Change	Q14, 1) Q14, 5)
Task Significance Change	Q14,8) Q14, 14)

Feedback Agent Change	Q14, 7) Q14, 10)
Feedback Job Change	Q14, 4) Q14, 12)
Experienced Meaningfulness of Work	Q15, 4) Q15, 7)
Experienced Responsibility for Outcomes of Work	Q15, 1) Q15, 8) Q15, 12) Q15, 15)
Knowledge of Actual Results of Work Activities	Q15, 5) Q15, 11)
Satisfaction General	Q15, 3) Q15, 9) Q15, 13)
Motivation Internal	Q15, 2) Q15, 6) Q15, 10) Q15, 14)
Satisfaction Security	Q16, 1) Q16, 11)
Satisfaction Pay	Q16, 2) Q16, 9)
Satisfaction Growth	Q16, 3) Q16, 6) Q16, 10) Q16, 13)
Satisfaction Social	Q16, 4) Q16, 7) Q16, 12)
Satisfaction Supervisory	Q16, 5) Q16, 8) Q16, 14)
Growth Need Strength	Q17, 1) Q17, 2) Q17, 3) Q17, 4) Q17, 5) Q17, 6) Q17, 7) Q17, 8) Q17, 9) Q17, 10) Q17, 11)

C) R-Studio Script Analysis

```
data_ohne1 <- as.data.frame(data[2:224,])

data_num <- matrix(nrow = 223, ncol = 77)

for(i in 1:223){#zeilen
  for(j in 17:77){#spalten
    data_num[i,j] <- as.numeric(data_ohne1[i,j])
  }
}

colnames(data_num) <- colnames(spaltennamen_matrix)
data_num <- data_num[,17:77]

data_dem <- data_ohne1[,1:16]

data_new <- cbind(data_dem,data_num)

nicht_na <- !is.na(rowSums(data_num))

data_nona <- data_new[nicht_na,]

index <- vector(length = 182)

for(i in 1:182){
  if(max(data_nona[i,17:77]) > 7 | min(data_nona[i,17:77]) < 1){
    index[i] <- FALSE
  }
  else{
    index[i] <- TRUE
  }
}
```

```
data_nona <- data_nona[index,]

#core dimensions - objective
dwo <- data_nona[,17]
autonomy <- data_nona[,20]
taskID <- data_nona[,23]
skillVar <- data_nona[,26]
taskSig <- data_nona[,29]
feedbackAgent <- data_nona[,32]
feedbackJob <- data_nona[,35]

coreDimensions <- data.frame(cbind(dwo,autonomy,taskID,skillVar,taskSig,feedbackAgent,feedbackJob))

#change in core dimensions - home office
dwo <- rowMeans(data_nona[,18:19])
autonomy <- rowMeans(data_nona[,21:22])
taskID <- rowMeans(data_nona[,24:25])
skillVar <- rowMeans(data_nona[,27:28])
taskSig <- rowMeans(data_nona[,30:31])
feedbackAgent <- rowMeans(data_nona[,33:34])
feedbackJob <- rowMeans(data_nona[,36:37])

coreDimensionsChange <- data.frame(cbind(dwo,autonomy,taskID,skillVar,taskSig,feedbackAgent,feedbackJob))

#psychological states
meaningfulness <- rowMeans(data_nona[,49:50])
responsibility <- rowMeans(data_nona[,38:41])
knowledge <- rowMeans(data_nona[,51:52])

criticalPsychologicalStates <- data.frame(cbind(meaningfulness,responsibility,knowledge))

#outcomes
motivationInternal <- rowMeans(data_nona[,43:45])
satisfactionGeneral <- rowMeans(data_nona[,46:48])
satisfactionSecurity <- rowMeans(data_nona[,53:54])
satisfactionPay <- rowMeans(data_nona[,55:56])
satisfactionGrowth <- rowMeans(data_nona[57:60])
satisfactionSocial <- rowMeans(data_nona[,61:63])
satisfactionSupervisory <- rowMeans(data_nona[64:66])
#Hypothesen

#The job core dimension skill variety is increased when working from home.
skillVarChange <- coreDimensionsChange$skillVar - 4
t.test(skillVarChange,alternative = "greater")
#t(180) = 17.88, p = .00

#The job core dimension task identity decreases when working from home.
taskIDChange <- coreDimensionsChange$taskID - 4
t.test(taskIDChange,alternative = "less")
#t(180) = -5.92, p = .00

#The job core dimension task significance decreases when working from home.
taskSigChange <- coreDimensionsChange$taskSig - 4
t.test(taskSigChange,alternative = "l")
#t(180) = -10.43, p = .00

#The job core dimension autonomy increases when working from home.
autonomyChange <- coreDimensionsChange$autonomy - 4
t.test(autonomyChange,alternative = "greater")
#t(180) = 16.98, p = .00

#The job core dimension feedback <Agent> decreases when working from home.
feedbackChange <- coreDimensionsChange$feedbackAgent - 4
t.test(feedbackChange,alternative = "l")
#t(180) = -8.13, p = .00

#The job core dimension feedback <Job> decreases when working from home.
feedbackJobChange <- coreDimensionsChange$feedbackJob - 4
t.test(feedbackJobChange,alternative = "l")
#t(180) = -8.28, p = .00
```

```
********************* PROCESS for R Version 4.0.1 *********************

           Written by Andrew F. Hayes, Ph.D.  www.afhayes.com
   Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************

Model : 4
    Y : satisfaction
    X : Feedback
    M : Knowledge

Sample size: 181

Random seed: 906557


**************************************************************************
Outcome Variable: Knowledge

Model Summary:
          R      R-sq       MSE         F       df1       df2         p
     0.2636    0.0695    1.6038   13.3699    1.0000  179.0000    0.0003

Model:
             coeff        se         t         p      LLCI      ULCI
constant    5.1008    0.4922   10.3630    0.0000    4.1295    6.0721
Feedback   -0.3357    0.0918   -3.6565    0.0003   -0.5169   -0.1545

**************************************************************************
Outcome Variable: satisfaction

Model Summary:
          R      R-sq       MSE         F       df1       df2         p
     0.4958    0.2458    0.9709   29.0078    2.0000  178.0000    0.0000

Model:
              coeff        se         t         p      LLCI      ULCI
constant     3.2664    0.4844    6.7429    0.0000    2.3104    4.2223
Feedback     0.4384    0.0741    5.9203    0.0000    0.2923    0.5845
Knowledge   -0.1781    0.0582   -3.0619    0.0025   -0.2928   -0.0633

**************************************************************************
Bootstrapping progress:
  |>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>| 100%

*************** DIRECT AND INDIRECT EFFECTS OF X ON Y ***************
```

```
********************* PROCESS for R Version 4.0.1 *********************

          Written by Andrew F. Hayes, Ph.D.  www.afhayes.com
   Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************

Model : 4
    Y : satisfaction
    X : autonomy
    M : responsibility

Sample size: 181

Random seed: 153454


**************************************************************************
Outcome Variable: responsibility

Model Summary:
          R       R-sq        MSE          F        df1        df2          p
     0.3676     0.1351     0.7142    27.9606     1.0000   179.0000     0.0000

Model:
             coeff         se          t          p       LLCI       ULCI
constant    3.7905     0.2612    14.5105     0.0000     3.2750     4.3059
autonomy    0.2512     0.0475     5.2878     0.0000     0.1575     0.3450

**************************************************************************
Outcome Variable: satisfaction

Model Summary:
          R       R-sq        MSE          F        df1        df2          p
     0.7481     0.5596     0.5669   113.1101     2.0000   178.0000     0.0000

Model:
                  coeff         se          t          p       LLCI       ULCI
constant        -0.0836     0.3433    -0.2434     0.8080    -0.7610     0.5939
autonomy         0.1645     0.0455     3.6150     0.0004     0.0747     0.2543
responsibility   0.8156     0.0666    12.2490     0.0000     0.6842     0.9470

**************************************************************************
Bootstrapping progress:
  |>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>| 100%

*************** DIRECT AND INDIRECT EFFECTS OF X ON Y ***************
```

```
********************* PROCESS for R Version 4.0.1 *********************

           Written by Andrew F. Hayes, Ph.D.  www.afhayes.com
   Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************

Model : 4
    Y : satisfaction
    X : Skill
    M : meaningfulness

Sample size: 181

Random seed: 486123


**************************************************************************
Outcome Variable: meaningfulness

Model Summary:
          R      R-sq       MSE         F       df1       df2         p
     0.2471    0.0610    1.0892   11.6372    1.0000  179.0000    0.0008

Model:
             coeff        se         t         p      LLCI      ULCI
constant    3.5206    0.4334    8.1239    0.0000    2.6655    4.3758
Skill       0.3171    0.0929    3.4113    0.0008    0.1337    0.5005

**************************************************************************
Outcome Variable: satisfaction

Model Summary:
          R      R-sq       MSE         F       df1       df2         p
     0.5146    0.2648    0.9465   32.0501    2.0000  178.0000    0.0000

Model:
                 coeff        se         t         p      LLCI      ULCI
constant        1.5188    0.4726    3.2136    0.0016    0.5862    2.4515
Skill           0.2654    0.0894    2.9679    0.0034    0.0889    0.4418
meaningfulness  0.4509    0.0697    6.4720    0.0000    0.3134    0.5884

**************************************************************************
Bootstrapping progress:
  |>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>| 100%

*************** DIRECT AND INDIRECT EFFECTS OF X ON Y ***************
```

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