



UNIVERSIDADE
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TIME OR MONEY: DO WORKING TIME MISMATCH,
INCOME, AND MATERIALISM INTERACT TO AFFECT
SUBJECTIVE WELL-BEING?

Dissertation presented to Universidade Católica Portuguesa to obtain a Master's
Degree in Psychology in Business and Economics

By

Nils Kreft

Faculty of Human Sciences

September 2022



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Abstract

Personal preferences, and the degree to which they are met, can have strong effects on one's well-being. To further develop the scientific literature in this field the current study examined the relationships of the variables working time mismatch, income, and materialism with subjective well-being and gave insights into the way in which working time mismatch interacts with income and materialism in predicting subjective well-being. For a sample of 240 European employees from the third industrial sector, most of them from Germany, a multiple regression model revealed significant negative effects of working time mismatch on both life satisfaction and emotional well-being, whereas materialism was only negatively associated with life satisfaction. Income positively predicted life satisfaction but did not have a significant relationship with emotional well-being either. Additionally, moderation analyses showed no significant interactions between working time mismatch and materialism nor income. However, probing of the interaction showed a conspicuous pattern in the relationship between working time mismatch, income, and emotional well-being, which indicates a potential relationship between the variables and requires further research. The findings can be used to aid in individual, organizational, and political decision-making to improve personal and social well-being.

Keywords: working time mismatch, income, materialism, subjective well-being

As preferências pessoais, e o grau de satisfação, podem ter fortes efeitos no bem-estar das pessoas. De modo a contribuir para o incremento da literatura científica neste campo, o estudo actual examinou as relações entre as variáveis desadequação do tempo de trabalho, rendimento e materialismo com o bem-estar subjectivo e evidenciou a forma como a desadequação do tempo de trabalho interage com o rendimento e o materialismo na previsão do bem-estar subjectivo. Para uma amostra de 240 empregados europeus do terceiro sector industrial, a maioria dos quais da Alemanha, um modelo de regressão múltipla revelou efeitos negativos significativos do desajustamento do tempo de trabalho tanto na satisfação da vida

como no bem-estar emocional, enquanto que o materialismo só estava negativamente associado à satisfação da vida. Os rendimentos apresentaram um impacto positivo na satisfação de vida, mas também não tinham uma relação significativa com o bem-estar emocional. Além disso, as análises de moderação não revelaram interações significativas entre a desadequação do tempo de trabalho e o materialismo, nem rendimento. Contudo, a análise da interacção mostrou um padrão conspícuo na relação entre a desadequação do tempo de trabalho, rendimento e bem-estar emocional, o que indica uma potencial relação entre as variáveis e requer mais investigação. Os resultados podem ser utilizados para ajudar na tomada de decisões individuais, organizacionais, e políticas para melhorar o bem-estar pessoal e social.

Palavras-chave: desajuste do tempo de trabalho, rendimento, materialismo, bem-estar subjectivo

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1. Introduction

“I have learned to seek my happiness by limiting my desires, rather than in attempting to satisfy them.” – John Stuart Mill, British philosopher.

The question of how to achieve happiness is at the core of philosophical debate since thousands of years. And many, like John Stuart Mill, have found that it is personal preferences that play a crucial factor in finding happiness. Until this day, happiness and well-being are a topic of interest for everybody in society, from families over employers to politicians, that continues to produce a wide range of research studies. The goal of the current study is to enhance this body of literature so that we can more precisely predict what work-life factors lead to enhanced well-being, or, on the contrary, what factors diminish well-being. To do so, the study analyzes variables for which people have differing preferences, namely working time, the desire for material goods, and income. Two of the aspects that are a focus in this research, income and working time, are central to characterizing one’s work-life. They have reciprocal effects not just on the job itself, but also on life outside of work, as they determine the amount of free time and the opportunities to spend money on essential, but also non-essential goods and services. The desire to buy those non-essential goods and services, which is conceptualized as materialism, is the third concept of interest in this study.

In the face of rising burnout and depression rates in many countries, rises in consumerism, inequalities in many societies, and the constant battle between forces demanding either longer working hours on the one, or shorter working hours on the other side, it is of utmost importance to study the effects of work-life factors such as income, working time, and materialism on well-being. As a result, we can make more informed policy decisions, both on a societal and on an organizational level, to improve social well-being, but also to make better personal decisions that allow us to flourish and live happy lives.

At the core of this study lies the concept of working time mismatch, as it is the least well-studied and a sensitive topic in contemporary research, politics, and social debates.

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Working time mismatch (WTM) describes the difference between one's typical weekly working hours and one's desired weekly working hours, given that income would adjust accordingly ($|WTM| = \text{Actual working hours} - \text{desired working hours}$).

The goal is to study the effects of these variables and their interactions on subjective well-being, resulting in the following research questions:

- 1) Do working the desired hours, higher income, and lower material values fully predict higher subjective well-being?
- 2) Are the relationships between income and subjective well-being, as well as between material values and subjective well-being, moderated by working time mismatch?

Well-being is a concept that is somewhat intuitive and yet hard to grasp, and many definitions and conceptualizations have existed throughout human history. Most of the recent literature uses the concept of subjective well-being, which includes both affective as well as cognitive factors (Cummins, 2000; Diener, 2009; Kahneman & Deaton, 2010). Whereas the cognitive side of a person's well-being describes more general ideas and evaluations about one's satisfaction with life circumstances, the affective side focuses on emotional well-being and the frequency of one's experience of positive or negative emotions (Diener, 2009; Kahneman & Deaton, 2010). Combined, the two can form a relatively coherent picture of a person's subjective well-being.

The relationship between income and well-being is well studied. A higher income has been frequently associated with higher well-being (Diener et al., 2013; Diener & Oishi, 2000; Kahneman & Deaton, 2010; Nickerson et al., 2003). Easterlin (1974) even found this effect to be true in all the 30 within-country studies he conducted in a diverse set of countries. Some hypotheses and studies suggest that this effect is only true up to a certain income level, after which the effect on well-being reduces or disappears (Diener et al., 1993; Jebb et al., 2018; Kahneman & Deaton, 2010; Sengupta et al., 2012), however, this income level is usually so high that it is not applicable for most people in society. Other studies did not find this plateau at all and rather suggest that income has an unlimited positive linear association with well-being (Killingsworth, 2021).

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While laypeople wisdom suggests that money can't buy happiness, the scientific literature seems to point in a different direction, the reasons for which are manifold. Researchers suspect that more than anything else it is the fulfillment of basic needs as well as the avoidance of- or rather the better adaptability to- catastrophic life events that might be the cornerstone for this positive effect (Cummins, 2000; Diener & Oishi, 2000). Thus, the relationship might be indirect, and there are in fact other variables such as personality factors, health, and environmental factors that explain the positive association and determine levels of well-being, and it is simply that poorer people have less resources to maintain their optimal levels of functioning, for example through a reduced ability to eat healthy or to deal with situations of crises, which leads to diminished control and loss of optimism and self-belief (Cummins, 2000; Diener, 2009).

Others indicate that psychological factors such as social comparisons or level of desires affect the relationship between income and well-being (Diener & Biswas-Diener, 2002). Studies found that the effect of income on well-being is largely relative and that the income of others, who act as reference groups for social comparison, is just as important as one's own income (Diener, 2009; Ferrer-i-Carbonell, 2005). They concluded that people are happier the higher their income is in comparison to others and that especially poorer people suffer from upward comparison, which diminishes their well-being (Ferrer-i-Carbonell, 2005).

It has also been shown that, further than just for the fulfillment of basic needs, income can serve to fulfill other, non-essential desires. It might be personal preferences that determine the relationship strength between income and well-being or life satisfaction measures. For example, materialism is generally a strong predictor for lower life satisfaction (Dittmar et al., 2014; Richins & Dawson, 1992). However, this negative effect is especially strong for people who have material values AND low-income levels, while the effects are less detrimental for the well-off (Crawford Solberg et al., 2002; Nickerson et al., 2003).

In another study, Kahneman and Deaton (2010) relativize the assumption that money buys happiness altogether, as they found that there is a difference in the relationships between income and life satisfaction on the one, and income and emotional well-being on the other side. Their study of over 450000 responses of US residents suggests that high income can indeed "buy" life satisfaction, but that it does not lead to the same increase in emotional well-

being, and these results have been replicated by others (Sengupta et al., 2012). On the contrary however, low income is associated with reductions in both life satisfaction and emotional well-being (Kahneman & Deaton, 2010). The findings of Kahneman and Deaton are in accordance with the findings of Cummins, who found the association of income and well-being to be especially strong for poorer people (2000). A particular interest of the current study is to analyze if the difference in the predictive power of income on life satisfaction and emotional well-being can be replicated, and whether working time plays a role in this relationship.

In the realm of organizations and businesses, the wage is one way for employers to try to attract the best personnel and to improve job satisfaction (Schlechter et al., 2014). However, they often use other methods as well, such as offering good or better working conditions than competitors. Especially in recent years and in the face of the Covid19-pandemic as well as a skilled-labor shortages that exists in many industries in western countries, these methods include things like possible remote work options, flexible working hours, and reduced work weeks. Flexible or reduced working hours are not just a way to attract talent however, but also a proven mechanism for organizations to improve productivity, efficiency, and job satisfaction (Beauregard & Henry, 2009; Bloom et al., 2006; Grund & Tilkes, 2021).

Not just in organizations, but also in politics, the topic of working hours is in heavy debate. For example, politicians in Germany debate the possibility of lengthening the standard work week and delaying the pension entry age to cope with huge labor demands. Other countries such as Belgium recently announced a country wide possibility for a 4-day-work week (though without a reduction in the standard working hours), or, like Iceland, announced a country-wide 35-hours work week. Additionally, policy initiatives and proposals like a universal basic income, which would most likely lead to reductions in average working hours, gain in popularity. Clearly, working time is a sensitive topic at the core of organizational, political, and social debate.

Many jobs are paid by the hour, yet also in permanent positions it is often the case that working longer hours leads to more income (Gicheva, 2013). Labor supply theory suggests that one always chooses their desired trade-off between free time and income, however reality

does not always follow the theory, as shown by a multitude of studies in which working time mismatches have been reported, with employees most often wishing to reduce working hours (Boheim & Taylor, 2003; Drago et al., 2009; Otterbach, 2010; Wooden et al., 2009). There is a growing body of evidence that suggests that working time by itself is not a reliable predictor of well-being. Studies found no significant direct association between the number of hours someone works and their subjective well-being (Angrave & Charlwood, 2015; Wooden et al., 2009). This is largely because people's life circumstances are not so easily generalizable and constantly changing, as they have varying time constraints, desires, and environments. For example, life events such as motherhood, widowhood, job loss, or retirement were significant predictors for changes in working time preferences and mismatches (Drago et al., 2009). What more accurately determines the effect of working time on well-being is the degree to which this time is in accordance with one's preferences (Angrave & Charlwood, 2015; Wooden et al., 2009). Even though working hours are not a predictor of well-being, people working long hours are more likely to be overemployed, which has been associated with lower levels of subjective well-being (Angrave & Charlwood, 2015; Wooden et al., 2009).

Overemployment is one of the two forms of working time mismatch, underemployment being the other. Working time mismatch describes the difference between one's typical working hours and their desired working hours. This phenomenon is a violation of classic labor supply theory, according to which the labor market should effectively allocate labor supply and demand according to individual preferences. Both underemployment as well as overemployment are associated with reduced subjective well-being, although overemployment seems to be more serious, especially so if it occurs over long time periods (Angrave & Charlwood, 2015; Wooden et al., 2009). One reason for the detrimental effect of overemployment might be that long working hours result in interferences of work with personal life. If that occurs, employees often report the desire to reduce their working hours (Reynolds & Aletraris, 2007). But working time mismatches do not only influence measures of well-being, but may even lead to mental health problems, as researchers concluded after analyzing a sample of workers from Germany and Australia, once again confirming the stronger negative effect of overemployment (Miranti & Li, 2020; Otterbach et al., 2016).

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The effects of mismatches for businesses are undesirable too, as researchers found reduced job satisfaction because of hours mismatches (Frei & Grund, 2022; Grund & Tilkes, 2021; Pagan, 2017), which in turn leads to undesired outcomes such as lowers organizational performance (Ostroff, 1992; Wood et al., 2012). Researchers found that apart from classical job characteristics it is also the perceived purpose of the job that might determine workers' preferences for working hours, as workers who find their work meaningful have more desire to work longer hours – and do so, thus not increasing mismatches (Reynolds & Aletraris, 2007). This finding suggests that working time preferences are at least partially determined by intrinsic motivators, which is in accordance with classical sociological theories of work. However, it has been shown that also extrinsic factors such as contractual status and wage play a crucial role in the development of working time preferences (Boheim & Taylor, 2003).

Another area of life in which people have differing preferences, and that might affect their working time preferences, is their desire for material goods. Materialism has been defined as “individual differences in people’s long-term endorsement of values, goals, and associated beliefs that center on the importance of acquiring money and possessions that convey status” (Dittmar et al., 2014), which is a definition that has been widely used and agreed upon by the scientific literature (Dittmar, 2007; Richins, 2004). Richins and Dawson (1992) developed the Material Values Scale, a widely used measurement tool in psychological research, in which they conceptualize materialism as consisting of three facets: The degree to which material goods are at the center of a person’s life (centrality), the degree to which they evaluate their own and others’ success based on possessions (success), and the degree to which they believe that possessions and their acquisition bring happiness and life satisfaction (happiness) (Richins, 2004).

The effects of materialism for employers and businesses might be counterintuitive. On the one hand, it seems logical for employers to assume that materialism is a prerequisite for employees to work productively and earn satisfactory amounts of money. However, researchers questioning this line of thinking found no connection between materialism and task performance and, to the contrary, even found a negative association between materialism and organizational citizenship (Deckop et al., 2015). It has also been associated with higher

burnout and turnover intention rates, while at the same time reducing positive job outcomes such as organizational commitment, satisfaction, and engagement (Deckop et al., 2010; Unanue et al., 2017).

High endorsement of material values can come from a variety of factors. While minimalism is a trending lifestyle approach (Uggla, 2019), the grand commercialization of societies all around the world is continuing and going hand in hand with rises in consumerist culture (Jackson, 2002; Trentmann, 2004). Marketing and media experts estimate the average person in western countries sees between 4000 and 10000 advertisements per day. Ads often target our natural urges and desires so that our minds are in a near-constant stage of desire for something new or better, the perfect body or life (Dittmar, 2007), and it has been shown that ad exposure leads to higher levels of materialism (Sirgy et al., 2012), even for children (Oprea et al., 2014). Further, determinants such as individual developmental tasks, cultural influences, and family environment during childhood have been associated with materialism, and it is a trait that is oftentimes reinforced throughout adulthood (Richins, 2017).

High levels of materialism can be problematic, as studies have shown that materialistic values are associated with lower levels of well-being and life satisfaction (Diener & Oishi, 2000; Richins & Dawson, 1992; Roberts & Clement, 2007; Sirgy et al., 2012). It has also been linked to work-family conflict, indicating that materialistic people are more willing to trade family time for work time (Promislo et al., 2010). However, preferences change faster than labor contracts, potentially trapping people in working time mismatches.

Materialism certainly plays a crucial role in life design, and the degree to which a person has material values might have significant effects on their life choices, such as the type of job they choose, the number of hours they want to work, and the income level they deem satisfactory. Reduced organizational commitment for example could indicate that materialistic people are less willing to work long hours, their desire for the acquisition of more material goods points to the opposite conclusion.

Materialism, income, and working time are concepts that influence each other in a complex and diverse manner. The study's goal is to deepen the scientific understanding by analyzing the role of working time mismatch on subjective well-being, especially in interaction with income and materialism. It is thus analyzed whether the interactions between

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materialism and working time mismatch, as well as between income and working time mismatch, exist, and what effect they have on subjective well-being. More specifically, this study first uses a multiple regression model to analyze the predictive power of working time mismatch, income, and materialism with subjective well-being. Additionally, it analyzes whether working time mismatch moderates the relationships between income and Subjective well-being and materialism and subjective well-being. Overall, these goals result in the following hypotheses:

H1) Low levels of working time mismatch, higher income, and lower material values predict higher levels of subjective well-being.

H2a) Working time mismatch moderates the relationships between income and subjective well-being.

H2b) Working time mismatch moderates the relationship between materialism and subjective well-being.

While the first hypothesis is straight-forward, the second hypotheses require explanation. It is assumed that the study replicates the previously found effect that more income leads to higher levels of subjective well-being. However, it is suspected that this relationship is strongest for those, whose working hours are in accordance with their preferences. If a high income comes with a working time mismatch, the positive effect is assumed to be weaker. Thus, it is hypothesized that the initial relationship depends on levels of working time mismatch.

A similar logic applies to the relationship between materialism and well-being. For example, working time preferences change over time, and people with materialistic values might be more likely to get caught in situations in which they work long hours due to their material desires, which has been linked to a higher chance of overemployment. Materialism is suspected to lead to lower well-being. This negative effect of materialism on subjective well-being is hypothesized to be strongest for those who suffer from a working time mismatch, thus depending on levels of working time mismatch.

2. Method

2.1. Procedure

In April 2022, a survey measuring all the relevant variables (see instruments section) and demographics was created using Qualtrics, and subsequently translated into German using validated translations of the used scales. It was then distributed via LinkedIn and similar platforms for professionals using convenience sampling. The survey link was posted by me as well as friends, family, and coworkers, with the goal of reaching a demographically as well as professionally diverse set of respondents.

At the start of the survey, the general purpose of the study was disclosed, as well as the fact that they were taking part in a survey for a final thesis project of the M.Sc. degree in ‘Psychology in Business and Economics’ at the Católica University of Lisbon. No further details or information about specific goals or hypothesis were given. Respondents were also informed that all answers were anonymous, and an e-mail address for questions or problems was provided. Participants had to give consent to start the survey. The full survey consisted of 43 questions and took about 10 minutes to complete.

2.2. Participants

After a period of 2 months, a total of 433 responses were recorded on Qualtrics, out of which 240 were complete and fulfilled the inclusion criteria. The inclusion criteria for this study were to be working in the third industrial sector, to be at least 18 years of age, and to be employed in a European country.

The final sample (N=240) included respondents from 11 different countries, with the distribution being as follows: Germany N=201 (83.8%); Southern Europe (Italy, Spain, Portugal) N=24 (10%); Western and Northern Europe (UK; France, Sweden, Norway, Austria, Swiss, The Netherlands) N=15 (6.2%). Of the participants, N=98 (41.2%) were male, N=138 (57.1%) were female, and N=4 (1.7%) were non-binary. The sample’s mean age was 40 years old, with a standard deviation of 10.92 and a range from 18 to 63. The sample’s age distribution was as follows: 18-29 years old; N=53 (22.1%), 30-39 years old; N=70 (29.3%), 40-49 years old; N=58 (24%), 50 years or older; N=59 (24.6%).

2.3. Variables and Instruments

The first independent variable, Income, was measured using the following single-item question: “If you add up the income from all sources, which option applies to your entire monthly net personal income?”. Participants were asked to indicate their income on a 12-point scale, ranging from 1: “Less than 1000€” and 2: “Between 1000€ and 1300€” to 11: “Between 3700€ and 4000€” and 12: “More than 4000€”. A single-item measure was chosen because income questions are typically more likely than other questions to be skipped, thus keeping the number of questions as low as possible reduced the risk for incomplete survey responses (Kuhn, 2019). Additionally, the single-item measure was sufficient to obtain all the desired information, therefore making more detailed questions unnecessary. Income was measured using income bands, which improves response likelihood and quality, however, it comes with a loss of information (Kuhn, 2019). For the sake of this study, the loss of information was preferred over the potential loss of responses.

To measure the second independent variable and moderator variable working time mismatch, participants were asked about their typical weekly working hours, as well as their desired weekly working hours, considering their income would fall or rise accordingly. For data analysis, a balance score was calculated by subtracting the desired weekly working hours from the typical weekly working hours, resulting in a positive (overemployed) or negative (underemployed) score. For this study, working time mismatch was defined as the **absolute difference** between someone’s typical average working hours per week and their desired average working hours per week, which is indicated by the absolute value signs in the below shown equation.

$$|\text{WTM}| = \text{Typical weekly working hours} - \text{Desired weekly working hours}$$

There is no differentiation between overemployment and underemployment. However, where appropriate, additional information about the differences between the overemployed and underemployed portions of the sample are provided.

The third independent variable, Materialism, was measured using the Material Values Scale (MVS). The original scale was developed by Richins & Dawson and consisted of 18

items (1992). Richins reevaluated the scale in 2004 and developed a shortened version, containing 9 items. This short form, which has acceptable reliability (Cronbach's alpha of 0.82) and a validity index of 0.36, was used in this study (Richins, 2004). For each of the 9 items, participants were asked to rate their level of agreement on a five-point Likert scale, ranging from 1: "Strongly Disagree" to 5: "Strongly Agree". The highest possible score on the scale is 45 (very materialistic), while the lowest possible score is 9 (not at all materialistic). The MVS measures each of the three interrelated components of materialism, as defined by Richins and Dawson (1992). For each of the components, centrality, success, and happiness, the short form of the MVS consists of three items. One of the items required reverse coding. An example item for the measurement of the centrality component is: E.g., "I like a lot of luxury in my life."; An example item for the success component is: E.g., "The things I own say a lot about how well I'm doing in life."; An example item for the happiness component is: E.g., "I'd be happier if I could afford to buy more things.". For the German version of the survey, the validated translations from the German version of the Material Values Scale were used (Müller et al., 2013).

Subjective well-being has been conceptualized as consisting of two components: Satisfaction with life, and emotional well-being (Cummins, 2000; Diener, 2009; Kahneman & Deaton, 2010). In order to get a full picture on subjective well-being, two different scales were used, one for each of the components.

The Satisfaction with life scale (SWLS) has been a popular measurement instrument in psychology and other sciences for many decades. Developed by Diener, Emmons, Larsen, and Griffin in 1985, it has been widely used in contemporary research to measure levels of life satisfaction, but in some cases even as a tool to directly assess well-being (Pavot & Diener, 2008). The SWLS consists of five items, that measure the cognitive judgments a person makes about satisfaction with their life (Diener et al., 1985). The instrument has good reliability, with a Cronbach's alpha of 0.87, and moderately strong correlations with other measures of subjective well-being (Diener et al., 1985). For each of the items, respondents were asked to rate their level of agreement on a seven-point Likert scale ranging from 1: "Strongly Disagree" to 7: "Strongly Agree". The highest possible score on the scale is 35 (very satisfied), while the lowest possible score is 5 (not at all satisfied). An example item of the scale is: E.g., "In most

ways my life is close to my ideal.”. For the German version of the survey, the translated items from the validated German version of the SWLS were used (Janke & Glöckner-Rist, 2012).

The Scale of Positive and Negative Experience (SPANE) was used to measure the affective component of subjective well-being. It assesses the frequency of positive and negative emotions experienced in the last four weeks (Diener et al., 2010). The SPANE is a 12-item scale, in which six items measure positive feelings and the other six measure negative feelings. The scale produces a sub-score for positive emotions and another sub-score for negative emotions. These scores can then be combined to produce a balance-score, which was used to assess emotional well-being in this study. Despite having a limited number of items, considering the diverse nature of the emotional spectrum, the scale allows assessing a wide range of emotions because half of the items, three per subscale, are more general in nature. Example items for the general feelings are: E.g., “positive”, “pleasant”, “negative”, and “unpleasant”, whereas examples for the more specific items are: E.g., “Joyful” and “Angry”. In the survey, participants were asked to rate the frequency of which they experienced each of the items during the past four weeks on a five-point Likert scale, where 1 = “Very Rarely or Never” and 5 = “Very Often or Always”. The balance-score can range from -24 (unhappiest) to 24 (happiest). The SPANE has a good internal consistency with a Cronbach’s alpha of 0.89, and correlates substantially with other instruments that measure feelings and positive emotions, as well as well-being and life satisfaction (Diener et al., 2010). For the German version of the survey, the validated translations of Heise, Rahm & Schuldt were used (Rahm et al., 2017).

2.4. Statistical Analysis and Research Model

The data was analyzed using SPSS version 28. The original data set from Qualtrics was inserted and cases that did not meet the inclusion criteria were excluded. All relevant variables and the final scores for the scales were calculated. Descriptive statistics for the sample’s demographic information were obtained, followed by descriptive statistics about the variables of interest (working time mismatch, income, materialism, subjective well-being). Boxplots were used to identify outliers, and the Shapiro-Wilk test was employed to confirm the variables’ normal distributions. Following, scatterplots were used to check the assumption of

linearity between the variables. A Pearson correlation matrix, which included demographic variables age and gender, was then calculated to obtain a first glimpse on the variable's associations.

To answer the first research question, the study used a multiple regression model. The independent variables were working time mismatch, income, and materialism. The dependent variable was subjective well-being. Due to the two-faceted nature of subjective well-being, two different regression models were tested: Model 1a using the SWLS as dependent variable, and model 1b using the SPANE as dependent variable. Before running the analysis, the assumptions for a multiple regression analysis were tested.

For the second research question, moderation analyses were conducted using PROCESS (Hayes, 2013). In the first analysis, income was the independent variable and subjective well-being the dependent variable, whereas working time mismatch served as moderator variable. Again, two separate analyses were conducted, one for the life satisfaction component and another for the emotional well-being component (Models 2a and 2b). Bootstrapping was employed to increase robustness of the analysis. After conducting the initial moderation analysis, the interaction was probed. For this supplementary analysis, the sample was decomposed at the 16th, 50th, and 84th percentile using the pick-a-point approach (Hayes, 2013). The goal of this was to aid the interpretation of the results and to help in the answering of the hypothesis, in which working time mismatch was assumed to have different effects on the relationship between income and subjective well-being for different levels of income.

The second component of the second research question required an analysis with materialism as independent, subjective well-being as dependent, and working time mismatch as moderator variable. For the same reasons as above, the analysis was conducted twice using PROCESS, once for each of the two components of subjective well-being (Models 3a and 3b), and subsequently probed in the same manner as described above.

Figure 1 shows a conceptual diagram of the multiple regression model. Figure 2 shows the conceptual moderation model of income and working time mismatch, and Figure 3 shows the statistical model of the interaction effect between materialism and working time mismatch. Figures 2 and 3 are thus different means of displaying the same type of relationship.

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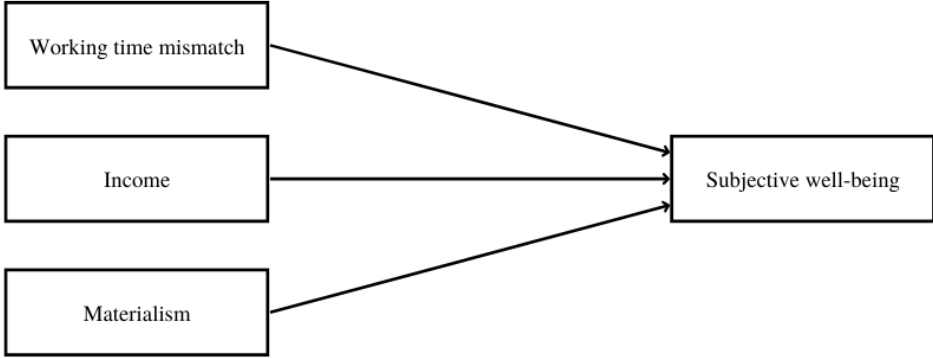


Figure 1: Multiple regression model

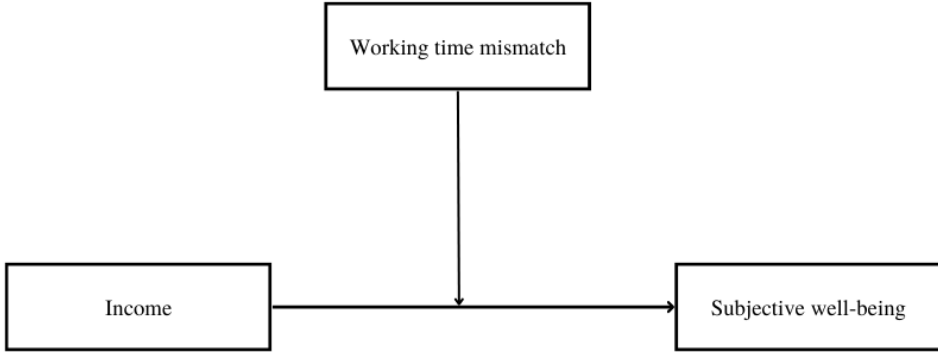


Figure 2: Conceptual moderation model income x working time mismatch

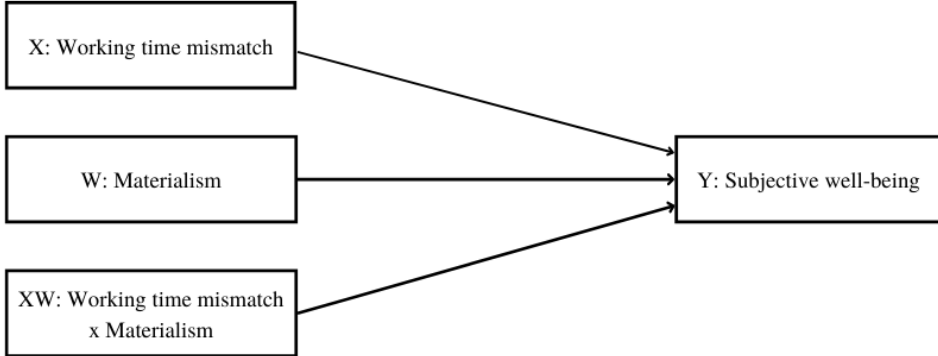


Figure 3: Statistical moderation model materialism x working time mismatch

3. Results

3.1. Descriptive Statistics

The first independent variable was income. The mean monthly net personal income, which was estimated after centering the income bands around their midpoint, was 2767€. N = 51 (21.3%) had a monthly net income between 0€ and 1900€, N = 59 (24.5%) had a monthly net income between 1900€ and 2500€, N = 66 (27.5%) had a monthly net income between 2500€ and 3400€, and N = 64 (26.7%) earned more than 3400€. The distribution of income was roughly normal, with no skewness (0, SE = 0.16), however with a strong kurtosis of -1.03 (SE = 0.31).

For the second independent variable, working time mismatch, first, statistics about participants' typical weekly working hours were obtained. The sample had a mean of 38.18 (Standard deviation (SD) = 9.29) typical working hours, ranging from 4 to 64 hours per week. N = 51 (20.9%) worked on average 30 hours or less per week, N = 100 (42.5%) worked between 31 and 40 hours per week, N = 58 (24.5%) worked between 41 and 45 hours per week, and N = 29 (12.3%) worked more than 46 hours per week.

The mean of desired working hours if income would adjust accordingly was 33.11 hours (SD = 8.02), ranging from 6 to 70 desired hours per week. A large portion of the sample, N = 162 (67.9%), desired to work fewer hours per week, even if their income would adjust accordingly, and were thus overemployed. Out of the overemployed, N = 57 (23.9%) wished to reduce their working time by 5 hours or less, thus having a slight mismatch. N = 84 (35.3%) worked between 6 and 15 hours per week more than they desired, and N = 21 (8.6%) were overemployed by more than 16 hours per week. For the remaining sample, N = 33 (13.5%) preferred to work more hours per week, therefore being underemployed. Only N = 45 (18.6%) had no difference between actual and desired working hours.

The variable working time mismatch, which includes the absolute values of all participants, including the underemployed (values < 0), the overemployed (values > 0), as well as those having no mismatch (value=0), showed a couple of outliers. The four extreme outliers were excluded from further analysis. The four cases were all overemployed, worked long hours and desired to work zero hours, which seemed either unrealistic, indicates measurement error, or wealth outside of income. After excluding the outliers, the mean working time

mismatch was 7.5 hours with a standard deviation of 6.17 hours and a maximum of 30 hours. The distribution was roughly normal, though still with relatively high - but acceptable - levels of positive skewness of 0.94 (SE = 0.16) and kurtosis of 0.94 (SE = 0.32).

The third independent variable, materialism, which was measured using the Material Values Scale, had a mean score of 20.43, a standard deviation of 5.81, a minimum score of 9, and a maximum score of 39. The distribution was approximately normal, with a slight positive skewness of 0.66 (SE = 0.16) and a kurtosis of 0.28 (SE = 0.31).

The first component of subjective well-being, life satisfaction, was measured using the Satisfaction with Life Scale (SWLS). The scores ranged from 8 to 35, with a mean score of 25.47 (SD = 5.60). Life satisfaction was roughly normally distributed, but slightly negatively skewed (-0.79, SE = 0.16) and with a kurtosis of 0.15 (SE = 0.31).

The second component of subjective well-being, emotional well-being, was measured using the Scale of Positive and Negative Experience (SPANE). The mean score of 6.35 (SD = 7.33) lied in a range from -13 to 23. The distribution was roughly normal with a slight negative skewness of -0.25 (SE = 0.16) and a kurtosis of -0.54 (SE = 0.31).

3.2. Analysis

After excluding the outliers (as done with working time mismatch) and confirming the assumptions of normality, the relevant variables proved to be roughly linear by means of visual interpretation using scatterplots. The correlation matrix (Table 1) showed significant correlations for all three predictor variables with both measures of subjective well-being, except for income, which did not correlate significantly ($\alpha = 0.05$) with emotional well-being.

Working time mismatch correlated with neither income, nor with materialism, which is surprising considering this study's hypothesis; however, it does not eliminate the possibility of a moderation effect on the relationships of the two variables with subjective well-being. Age was positively correlated with income, and both age and income were negatively correlated with materialism.

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Correlations

		Monthly net personal income	Working Time Mismatch (absolute values)	Materialism	Age	Gender	Life satisfaction (SWLS)	Emotional well- being (SPANE)
Monthly net personal income	Pearson Correlation	1	-,033	-,195**	,392**	-,175**	,329**	,123
	Sig (2- tailed)		,609	,003	<,001	,007	<,001	,059
	N	236	236	236	236	236	236	236
Working Time Mismatch (absolute values)	Pearson Correlation	-,033	1	,083	-,069	-,003	-,215**	-,152*
	Sig (2- tailed)	,609		,207	,293	,966	<,001	,019
	N	236	236	236	236	236	236	236
Materialism	Pearson Correlation	-,195**	,083	1	-,32**	-,145*	-,264**	-,134*
	Sig (2- tailed)	,003	,207		<,001	,026	<,001	,039
	N	236	236	236	236	236	236	236
Age	Pearson Correlation	,392**	-,069	-,315**	1	,073	,121	-,059
	Sig (2- tailed)	<,001	,293	<,001		,264	,064	,370
	N	236	236	236	236	236	236	236
Gender	Pearson Correlation	-,175**	-,003	-,145*	,073	1	,031	,058
	Sig (2- tailed)	,007	,966	,026	,264		,636	,374
	N	236	236	236	236	236	236	236
Life satisfaction (SWLS)	Pearson Correlation	,329**	-,215**	-,264**	,121	,031	1	,612**
	Sig (2- tailed)	<,001	<,001	<,001	,064	,636		<,001
	N	236	236	236	236	236	236	236
Emotional well-being (SPANE)	Pearson Correlation	,123	-,152*	-,134*	-,059	,058	,612**	1
	Sig (2- tailed)	,059	,019	,039	,370	,374	<,001	
	N	236	236	236	236	236	236	236

**· Correlation is significant at the 0.01 level (2-tailed).

*· Correlation is significant at the 0.05 level (2-tailed).

Table 1: Correlation Matrix

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Gender correlated significantly with income and materialism, as males were more likely to earn more money and to be more materialistic. However, neither age, nor gender correlated with either measure of subjective well-being. Therefore, they were not included in the regression model.

Before running the regression models, first the necessary assumptions were investigated. As explained, the first regression analysis focused on the life satisfaction component of subjective well-being, with the overall score of the Satisfaction with Life Scale (SWLS) as outcome variable. The scatterplot of the unstandardized predicted values and the studentized residuals demonstrated the relationship between the variables to be slightly linear, thus confirming the assumption of linearity. Further, the data points were roughly equally distributed along the horizontal line, showing homoscedasticity of the residuals. Casewise diagnostics with a range of 3 standard deviations showed no results, indicating that no further outliers exist. The leverage values and cook's distances had no large values, confirming the absence of outliers. Further, the model had no autocorrelation (Durbin Watson of 2.01) and no multi-collinearity (all VIF values were between 1.01 and 1.05). Finally, the histogram of standardized residuals confirmed the assumption of normality of the residuals.

The R^2 for model 1a was 0.186 (adjusted $R^2 = 0.175$), which indicates a moderate goodness-of-fit according to Cohen (1988). As predicted, the variables income, working time mismatch, and materialism were able to statistically significant predict life satisfaction, $F(3, 232) = 17.63, p < 0.001$, with each of the coefficients being significant at the 0.01 level (See Table 2).

To fully answer the first research question and incorporate both components of subjective well-being, the same analysis was conducted again but instead with emotional well-being, measured with the balance score of the Scale of Positive and Negative Experience (SPANE), as outcome variable. The assumptions of linearity between the variables and homoscedasticity of residuals were again tested and accepted by means of visual representation using a scatterplot, where the unstandardized predicted values were on the one, and the studentized residuals on the other axis. Casewise diagnostics, as well as leverage values and cook's distances, confirmed the absence of extreme outliers. A Durbin Watson of

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1.96 indicated no autocorrelation between residuals and the VIF values within the range of 1.01 to 1.05 showed no multi-collinearity. Finally, the histogram of standardized residuals demonstrated the normality of residuals.

The R^2 for the overall model (model 1b) was 0.047 (adjusted $R^2 = 0.035$), which indicates a low goodness-of-fit according to Cohen (1988). Nevertheless, the model was able to statistically significant predict emotional well-being, $F(3, 232) = 3.86$, $p = 0.01$. However, only working time mismatch was a statistically significant predictor (See Table 3). Hypothesis 1 was only partially supported, as income and materialism only predicted the life satisfaction component of subjective well-being, not the emotional well-being aspect of it.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	27,314	1,569		17,414	<,001
	Monthly net personal income	,471	,100	,285	4,716	<,001
	Working Time Mismatch (absolute values)	-,172	,054	-,190	-3,190	,002
	Materialism	-,187	,058	-,193	-3,191	,002

^a Dependent Variable: Life satisfaction (SWLS)

Table 2: Regression Coefficients Model 1a

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8,812	2,216		3,977	<,001
	Monthly net personal income	,212	,141	,098	1,504	,134
	Working Time Mismatch (absolute values)	-,167	,076	-,141	-2,187	,030
	Materialism	-,131	,083	-,104	-1,583	,115

^a Dependent Variable: Emotional well-being (SPANE)

Table 3: Regression Coefficients Model 1b

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To answer the second research question, the assumptions for moderation analyses were tested. The relationship of all variables involved in the moderation analysis was approximately linear, as assessed by visual inspection of the scatterplots after LOESS smoothing. The graph of standardized residuals and standardized predicted values showed a slight curvature in one peripheral region, which could result in an underestimation of the real effect and a loss of statistical power. However, the breach of linearity was not detrimental enough to stop the analysis. The moderation analysis was conducted to determine whether the interaction between income and working time mismatch significantly predicts life satisfaction.

The overall model 2a was significant, $F(3, 232) = 14.79$, $p < 0.001$, predicting 15.43% of the variance, a moderate goodness-of-fit according to Cohen (1988). However, the interaction term was not significant: $\Delta R^2 = 0.44\%$, $F(1, 232) = 0.96$, $p = 0.33$, 95% CI[-0.05, 0.02]. Even though the interaction was not significant, the pick-a-point approach was employed to see if any insights could come from the decomposition of the relationship between the variables. Probing at the 16th, 50th, and 84th percentile showed that no matter the level of working time mismatch, a higher income always resulted in more life satisfaction compared to lower income levels. However, those earning high income with high levels of working time mismatch had lower life satisfaction than those with high income and low levels of working time mismatch, demonstrating the direct effect of working time mismatch on life satisfaction found in the initial regression analysis. Contrary to hypothesis though, the hours mismatch did not influence the relationship between income and life satisfaction.

Even though the initial regression model showed no significant relationship between income and emotional well-being, a moderation analysis was conducted for the second component of subjective well-being as well. The relationship of all variables was approximately linear, more so than in the case of life satisfaction.

The overall moderation model 2b was significant, with $F(3,232) = 5.37$, $p = 0.001$ predicting 4.68% of the variance. Once again however the interaction term was not significant with $\Delta R^2 = 0.96\%$, $F(1, 232) = 2.86$, $p = 0.092$, 95% CI[-0.073, 0.004]. Probing showed that more income did increase emotional well-being, however only for lower levels of working time mismatch. For example, in the absence of a working time mismatch ($WTM = 0$), the low-income group (16th percentile) had a score of 5.7 on the SPANE, while the high-income group

(84th percentile) had a score of 10.2. At high levels of working time mismatch (84th percentile = 14 hours), all income levels (16th, 50th, and 84th percentile) had scores between 5 and 5.3, which means a lower emotional well-being compared to even the lowest income level without a mismatch. This finding from the decomposition of the relationship was in accordance with the hypothesis that the relationship between income and well-being depends on levels of working time mismatch, yet it was not statistically significant in this study. Nevertheless, the probing as well as the relatively low p-value were indicative of a potential relationship between the tested or related variables.

Next, the moderation analysis with materialism as independent, working time mismatch as moderator, and life satisfaction as outcome variable was conducted (Model 3a). The scatterplot after LOESS smoothing visually demonstrated the linearity of the relationship of all variables involved in the moderation analysis.

The overall model was significant and predicted 10.93% of the variance: $F(3,232) = 8.74$, $p < 0.001$. As before, working time mismatch did not have a significant interaction with the independent variable materialism: $\Delta R^2 = 0.18\%$, $F(1, 232) = 0.12$, $p = 0.53$, 95% CI[-0.01, 0.03]. Probing, as one would expect with such a strongly non-significant effect, revealed no patterns of interest outside the documented direct effects of materialism and working time mismatch.

Finally, though the multiple regression did not show a significant relationship between materialism and emotional well-being, the moderation analysis was repeated with emotional well-being as outcome variable (Model 3b). The relationship of all variables was approximately linear.

The overall model was significant, predicting 4.13% of the variance: $F(3,232) = 3.96$, $p = 0.009$. Working time mismatch and materialism did not have a significant interaction effect: $\Delta R^2 = 0.31\%$, $F(1, 232) = 0.72$, $p = 0.40$, 95% CI[-0.01, 0.03]. As for life satisfaction, probing did not provide any further insights. The hypothesis that working time mismatch would moderate the relationship between materialism and subjective well-being was not supported.

4. Discussion

The purpose of this study was to examine the relationships of the variables working time mismatch, income, and materialism with subjective well-being and to gain insights into the way in which working time mismatch interacts with income and materialism in predicting subjective well-being. For a sample of European workers from the third industrial sector, the majority of which were German, two hypotheses were tested. The first hypothesis was that working time mismatch and materialism were negatively, and that income was positively related with subjective well-being. The second hypothesis was that working time mismatch moderated the relationships between income and subjective well-being and between materialism and subjective well-being.

The findings of the study supported the hypothesis that working time mismatch, the variable at the center of the research, was negatively related with both life satisfaction and emotional well-being, thus fully predicting subjective well-being. This finding is largely in accordance with previous studies that have reported a negative relationship between working time mismatches and well-being (Angrave & Charlwood, 2015; Wooden et al., 2009). Income was positively related with life satisfaction, and materialism was negatively related with life satisfaction; however, neither of the two variables had a significant relationship with emotional well-being. The positive association between income and well-being has been thoroughly noted in previous studies (Diener et al., 2013; Diener & Oishi, 2000; Kahneman & Deaton, 2010; Nickerson et al., 2003). Its limited predictive power for emotional measures of well-being was also in accordance with previous research (Kahneman & Deaton, 2010; Sengupta et al., 2012). Further, the negative association between materialism and various well-being measures had been established in numerous studies (Diener & Oishi, 2000; Dittmar et al., 2014; Richins & Dawson, 1992; Roberts & Clement, 2007; Sirgy et al., 2012). A significant relationship with emotional well-being was hypothesized according to the literature, which was not supported by this study's results. Yet, also previous studies found affective measures to have only weak associations with materialism (Dittmar et al., 2014). The first hypothesis was only partially supported, as income and materialism only related to evaluative measures of life satisfaction, not to the affective component of well-being.

Therefore, unsurprisingly, the overall regression model was much stronger at predicting life satisfaction than emotional well-being, indicating that the variables, especially income and materialism, have larger effects on people's general evaluations of their life circumstances than on their daily emotional experiences. A working time mismatch however also negatively influenced affective measures of well-being, demonstrating its various detrimental effects on people's lives.

The results of the study did not support the hypothesis that working time mismatch influences the relationship between income and subjective well-being. The statistical finding was little surprising for the emotional component of well-being because income did not correlate with neither working time mismatch nor emotional well-being in this sample, as found in the initial correlation matrix. For the life satisfaction component however, the non-significance of the interaction term was surprising and contrary to the hypothesis. A dependency on levels of working time mismatch for the relationship between income and life satisfaction was assumed, but not confirmed. One potential explanation could be the violation of linearity in the relationship between the variables, which was found prior to the analysis, as non-linear relationships are typically underestimated in linear analyses such as the regression model used in this study. Further research using non-linear analysis is thus needed to fully answer this research question, which would be an important feat, as it is essential for political and organizational decision-making to understand the relationship between income and working time mismatches.

Probing of the non-significant interaction between income and working time mismatch demonstrated that there was in fact an effect of income on emotional well-being, and that it was much stronger for lower or non-existing levels of working time mismatch than for high levels of working time mismatch. Visual interpretation of the decomposed effect indicated that working time mismatch suppressed the positive effects of income on emotional well-being, which could be one explanation for the non-significance of the relationship between income and emotional well-being in the initial regression model. This finding, though non-significant, indicates that the positive association between income and subjective well-being can also exist for affective measures, a reasonable claim according to the existing literature, which predicts that the effect of income on subjective well-being stems from its ability to satisfy basic human

needs and provide better means to cope with moments of crisis, both of which are important determinants of emotional well-being as well (Cummins, 2000; Diener & Oishi, 2000). On the other hand, the finding from the probing analysis is contrary to other studies which did not find a significant relationship between income and emotional well-being (Kahneman & Deaton, 2010; Sengupta et al., 2012). The current study offers one possible explanation, as the relationship might be susceptible to be undermined by the presence of a high working time mismatch. For example, businesses want to attract and satisfy good personnel with an adequate remuneration; however, they could potentially sabotage this process by demanding their workforce to work over hours, leading to more frequent experiences of negative emotions. The findings from the probing of the interaction were visible, yet not statistically significant, which is why further investigation on the interaction between income and working time mismatch or closely related concepts would be interesting and is recommended.

The second component of the moderation hypothesis, in which working time mismatch was hypothesized to interact with materialism when predicting subjective well-being, was not supported either. For both life satisfaction and emotional well-being, the interaction term was not significant. Rather, working time mismatch seemed to largely be independent of the other factors, income and materialism. The reverse is also true, and materialism's association with well-being did not depend on levels of working time mismatch. The hypothesis was based on assumptions about the decision-making of workers with materialistic values, such as their increased willingness to enter working agreements with long working hours in return for high income. Longer working hours have been associated with higher chance of overemployment (Angrave & Charlwood, 2015; Wooden et al., 2009), and eager commitment to contractual agreements might make it more difficult to react to changes in personal working time preferences, which can be the result of changes in life circumstances (Drago et al., 2009). The resulting working time mismatch was supposed to make the negative relationship between materialism and subjective well-being even worse. However, no indication for the truthfulness of these assumptions was found in the data. To the contrary, the correlation analysis showed a negative correlation between income and materialism, which makes the above-stated thought process seem illogical. A possible explanation for this phenomenon can be found in the literature, where researchers found the tendency to compare oneself with others a primary

cause of ill-being for people with lower income (Diener, 2009; Ferrer-i-Carbonell, 2005). It might thus be this upward-comparison, or rather the desire to have what others have which low-income people are more likely to experience, which leads to higher levels of materialism in low-income people and subsequently to reduced well-being, which has also been demonstrated in previous studies (Crawford Solberg et al., 2002; Nickerson et al., 2003). Additionally, materialism has been associated with lower levels of job and career satisfaction, which could hinder career development and thus result in lower average income levels for materialistic people (Deckop et al., 2010). Finally, another reason might be found in the construction of the measurement tool used for materialism, as the Material Values Scale (Richins, 2004) contains items such as “I’d be happier if I could afford to buy more things” and “It sometimes bothers me quite a bit that I can’t afford to buy all the things I’d like”, for which low-income people might have a higher probability to agree with, thus earning higher overall scores in the scale.

The moderation analysis in which income and working time mismatch were independent variables explained larger amounts of the variance of life satisfaction than the model in which materialism and working time mismatch were the independent variables. As neither of the models had a significant interaction coefficient and working time mismatch was the same in both models, it can be concluded that income was a stronger predictor of life satisfaction. In the absence of significant interactions between the independent variables, the initial regression model, in which only direct effects were tested, was strengthened. Nevertheless, the model with the best goodness-of-fit was still only a moderate fit, which demonstrates the complex and diverse set of factors that influence people’s subjective well-being.

The current study’s sample had above-average levels of both life satisfaction and emotional well-being. The average score for life satisfaction was 25.47, which is a high score according to Diener (2006). Similarly, average emotional well-being (6.35) was far above the baseline of 0. The study’s results did not offer possible explanations for this curious occurrence; however, a sampling bias cannot be ruled out.

Additional insights from the sample were the significant correlation between gender and income, potentially indicating the existence of a gender wage gap. However, this effect could also be the result of factors this study did not account for. For example, no test was conducted

to check for a potential relationship between gender and typical working hours, which could be a factor in explaining the income difference, although at least no correlation between working time mismatch and gender was found. Apart from working time, participants were not asked about their job position, industry, or general personal characteristics and life circumstances, all of which can have strong influences on income as well as well-being. Further, though the distribution of income was roughly normal, a histogram revealed a comparably large number of people who belonged to the highest income bracket. Offering more answer options for higher incomes could have thus prevented a loss of information and offered more detailed insights into the relationship of income with the other variables.

The study did not account for differences between the respondents' countries, which could have had effects on the study's results. For example, the average income in Germany is roughly 30% higher than in Spain or Italy, while the Netherlands average income is still higher than in Germany (Clark, 2022). The social comparison effect, which is one explanatory factor for the relationship between income and well-being, is country specific. Spanish workers are much more likely to compare themselves to other Spanish workers, and German workers are more likely to compare their income to other German workers' incomes. Thus, the within-person relationship between income and well-being should not be altered. However, the comparison between incomes from different countries could have been affected, as a high income in Spain, which might be accompanied by high levels of well-being, might only be an average income in Germany, thus distorting the results. Nevertheless, the effect can be assumed to be relatively small, as the vast majority of participants were German or from countries with similar average incomes, and the difference between those and Southern European countries was not large enough to completely alter the results. The benefits of a bigger sample thus outweighed the consequences of differences between countries. Material values might also differ across cultures (de Sá Neves dos Santos & Reis, 2008; Ger, 1990), gender and age groups (Dittmar, 2005; Dittmar et al., 2014), as well as other factors. However, as all respondents were from Western or Central Europe, the differences in cultures were assumed to be small enough to neglect for the sake of a larger sample size.

Especially interesting was the fact that working time mismatch was the only variable that significantly related to both measures of well-being. The literature offers insights into the

mechanisms with which that happens, such as the link between overemployment and work-family conflict (Crouter et al., 2001; Yamaguchi, 2010), its association with other shortcomings in the personal sphere of life such as hobbies and friendships (Reynolds & Aletraris, 2007), and the fact that it has even been associated with mental health problems (Miranti & Li, 2020; Otterbach et al., 2016). On the other end of the mismatch spectrum, underemployment can lead to feelings of self-doubt and reduced self-esteem (Prause & Dooley, 1997), which are fundamentally related to emotional well-being as well (Du et al., 2017). When conducting future research, it would be valuable to account for differences in underemployed and overemployed people, which likely requires a larger sample size. Further, the results of this study could be complemented using qualitative studies, as Campbell & van Wanrooy explain the complex nature of measuring working time mismatch (2013).

The current study has supported the previously established findings, that working time mismatch negatively influences well-being on many levels. Especially overemployment has been shown to be a serious risk-factor (Angrave & Charlwood, 2015; Miranti & Li, 2020; Otterbach et al., 2016; Wooden et al., 2009). The current sample's average desired working hours were 5 hours less than its actual typical working hours, indicating the prevalence of widespread overemployment. Therefore, individuals, organizations, and politicians should take measures to reduce their working time mismatches as much as possible. For individuals, this could include drastic steps like job changes, which have been associated with reductions in working time mismatches (Knaus & Otterbach, 2019). Changing to a job with more perceived meaningfulness might for example boost their desire to work more hours (Reynolds & Aletraris, 2007), thus reducing mismatches. The same effect occurs when workers receive more working time autonomy or flexibility (Reynolds & Aletraris, 2007), which might additionally lead to reductions of the negative effects of overemployment on job satisfaction (Grund & Tilkes, 2021). However, this autonomy might also be one of the causes of overemployment in the first place, for example due to workers' selective attention, resulting in the autonomy paradox, in which time autonomy leads to more overall working hours than in traditional employment models (van Echtelt et al., 2006). Thus, careful self-organization is necessary to reap the benefits of the given time autonomy.

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Organizations should do everything in their power to improve employee well-being and satisfaction too, as it has been linked to positive organizational outcomes such as productivity and performance, as well as employee and customer loyalty (Krekel et al., 2019; Ostroff, 1992). They can use the same mechanisms as individuals, e.g., reducing their employees' working time mismatches by providing more working time autonomy, which has also been associated with higher employee well-being (Hoeven & Zoonen, 2015), and by hiring personnel who perceive the company's work as meaningful. Further, as this study and previous research showed, paying a higher wage also improves levels of life satisfaction, as well as job satisfaction (Grund & Sliwka, 2001). As the literature suggests that the positive effect of income on life satisfaction is largely relative and dependent on individuals' comparisons to other reference groups, businesses might consider reducing or eliminating company-internal wage differences and paying employees more than industry competitors.

On the political side, one must question the effectiveness of policies that determine a standard work week for all or most workers in a country, regardless of life and work circumstances. More than 80% of the study's sample suffered from a working time mismatch, 67.9% of which desired to work fewer hours. Therefore, it might be useful to explore policies that reduce working hours and to give more room for individual decision-making when designing working time policies, as well as for the option of industries to find their own best working time agreements. By doing so, politicians might not only improve personal, but also environmental well-being (Pullinger, 2014). Generally, the protection of unions and workers' rights is a crucial step to avoid worker exploitation, and a minimum wage might be an effective tool in ensuring that nobody must work over hours to pay their bills, potentially endangering their own and their family's well-being. Workers hold a multitude of beliefs about the feasibility of working time reductions (Campbell & van Wanrooy, 2013), and politics should be a platform and safe space for the people in a society to openly discuss the possibilities, risks, and benefits of policies that reduce working time mismatches.

5. Conclusion

Using a multiple regression model, the current study found that working time mismatch was a significant predictor for both life satisfaction and emotional well-being, whereas income and materialism related only to life satisfaction, thus partially confirming the study's first hypothesis that the variables working time mismatch, income, and materialism predict subjective well-being. The second hypotheses that working time mismatch interacts with income and materialism on their relationships with subjective well-being was not statistically supported. Nevertheless, probing of the interaction effect of working time mismatch and income revealed a conspicuous pattern, in which the positive effect of income on emotional well-being was prevalent only for low or non-existing levels of working time mismatch, which indicates that working time mismatch suppresses the association and that income's influence on emotional well-being might indeed depend on levels of working time mismatch. However, the effect did not make it past the significance level in this study, which is why future research on the variable's relationships is strongly recommended. The relationship between income, working time mismatch and life satisfaction also requires additional investigation, as the statistical analysis tools used in this study did not account for the variable's violation of the linearity assumption. Overall, the results of the study of 240 European employees from the third industrial sector, most of them from Germany, complement the existing literature on the direct effects of working time mismatch, income, and materialism on subjective well-being, and offer new insights into the interactions between these variables. The findings have implications for individuals, businesses, and politics, as they demonstrate the need for conscious and science-based decision-making to improve individual and social well-being, and simultaneously offer insights into the ways in which that can be achieved.

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