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Workplace Diversity - A Driver of Job Satisfaction?

Evidence from Medical R&D Teams

by

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Abstract

Based on the increasing rate of globalisation resulting in a more diverse workforce, the purpose of this study is to investigate the relationship between diversity and job satisfaction in medical R&D teams. Determining such a relationship is highly valuable for managers of R&D teams to ensure the best possible output from the team, reducing turnover and keeping existing talent within the team or organisation. This study's investigation is based on the following research question; what is the effect of diversity on job satisfaction among medical R&D teams at Lund University? Following the literature review, a theoretical framework was created, and hypotheses were developed. The primary method of data collection was via a questionnaire sent out to medical R&D teams at Lund University. The questionnaire was used to collect data to calculate composite diversity (independent variable) and average job satisfaction (dependent variable) for each team. Composite diversity was calculated by including the following five attributes: personality, education, gender, age, and nationality. This data was then supplemented by seven in-depth interviews with team members from teams within the study.

The findings from the empirical data demonstrate a moderately negative correlation between composite team diversity and job satisfaction, and that this relationship is likely mediated through an employee's feeling of inclusion. The implication of this thesis is that to fully reap the benefits of a diverse workforce, managers and employers ought to ensure that the benefits of diversity are not counteracted by the negative effects of diversity on job satisfaction. This implication calls for further research into the field of diversity management and diversity training in relation to job satisfaction and the data collected from the interviews suggest a strong interest among R&D team members in participating in diversity training.

Key Words: Diversity, Job Satisfaction, R&D teams

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1 Introduction

Ensuring happy employees who are excited to come to work and perform well is arguably crucial for all managers eager to ensure organisational success. Understanding how to ensure total benefit from the advantages that a diverse workforce presents is essential for current and future leaders. This is especially important in times of enhanced globalisation, bringing about an increasingly diverse workforce. The effect of this diverse workforce is valuable to investigate in relation to its impact on the essential phenomenon of workplace happiness. To measure workplace happiness, job satisfaction is most commonly used (Wright & Bonett, 2007). In this study we therefore investigate the relationship between diversity and job satisfaction.

Job satisfaction has been identified to be important for successful teams (Gregory, 2011; Sokro, 2012). The contribution of job satisfaction to this success has been said to be for a variety of reasons, including to ensure that the right competence is attracted to the team (Sokro, 2012). Moreover, generating further knowledge within this area can help reveal what is needed to increase productivity and organisational commitment, as well as how to decrease absenteeism and turnover, which are often thought to be affected by job satisfaction (Ellickson, 2002). In terms of the factors contributing to job satisfaction, diversity has been identified as an influential factor (Blau, 1977 cited in Hauret & Williams, 2020; Kanter, 1977 cited Hauret & Williams, 2020). However, there have been conflicting results from studies investigating this relationship, for instance, Campbell (2011) compared to Williams and O'Reilly (2003). The conflicting results call for further clarification of the relationship between diversity and job satisfaction.

Diversity can make a significant contribution to any team. As diversity grants access to a larger pool of talent, it can help organisations move beyond a narrow-minded worldview belonging to one singular diversity attribute (Shemla, 2018), for instance age or gender. However, the reported effects of increased diversity on teams are somewhat conflicting, as both positive and negative results have been identified (Hauret & Williams, 2020). For example, high levels of diversity can make organisations more effective, successful and profitable, yet reaping the benefits of diversity poses a significant challenge for today's organisations (Hunt, Layton & Prince, 2015; Syed & Tariq, 2017)

One environment considered to have a particularly diverse workforce is medical research and development (R&D) teams. These teams often bring together individuals from multiple disciplines with varied specialist knowledge, known as informational diversity, creating unique working environments (Keller, Julian & Kedia, 1996; Kim & Song, 2020). Informational diversity is not the only type of diversity found within these commonly international workplaces (Cegarra-Navarro, Ruiz, Martinez-Caro & Garcia-Perez, 2021). Differing cultural backgrounds within R&D teams have also been discussed to be crucial to ensuring a variety of understanding and differing interpretations of identified problems (Cegarra-Navarro et al. 2021). As stated, this heterogeneity has been exacerbated by globalisation gaining momentum, resulting in

increasing cultural diversity within R&D teams (Cegarra-Navarro et al., 2021; Martin, 2014). The commonality of various diversity attributes within R&D teams demonstrates an increased need for understanding how this may affect the workforce. Therefore, investigating and gaining an understanding of workplace diversity and its effects is highly relevant and important for today's managers (Shemla, 2018; Hauret & Williams, 2020).

Understanding the effects of diversity in medical R&D teams is especially valuable due to these teams having the vital task of researching existing diseases and developing highly innovative treatment methods. Ultimately, this research greatly influences individual patient outcomes and thus helps to ensure a healthier global population. Many members of medical R&D teams devote their careers to developing cures for patients with life-threatening or lifelong illnesses and diseases. Furthermore, R&D teams commonly have intensive periods with heavy workloads due to the volatile conditions within which they operate. Therefore, medical R&D is an important sector to identify ways in which to increase job satisfaction (Hoisl, Gruber & Conti, 2016). Recently, the COVID-19 pandemic has reminded the world of the importance R&D teams in the field of medicine. However, to assist these crucial teams, other fields, including business and management, must pull together to understand and determine success factors of medical R&D teams.

1.1 Problem Statement

Moving forward, “[k]nowing the potential effects of diversity on employee attitudes is important in order to adopt managerial policies that mitigate any negative consequences of a more diverse workforce and promote any positive ones” (Hauret & Williams, 2020, p.419), highlighting the issue and need for further research into this area.

Considering the volume of research concerning diversity and its impact on teams, as will be demonstrated in chapter two, there appears to be a significant interest in the subject. The existing research between team diversity and job satisfaction currently provides conflicting evidence with limited explanation, alongside the consideration of only one or two types of diversity (Campbell, 2011, Kim & Song, 2020). To the best of our knowledge, there appears to be a gap in the literature within the field of business and management concerning composite team diversity and the consequences for job satisfaction. This indicates an opportunity and need for further research. In addition, to the best of our knowledge, there is no existing research investigating the relationship between composite team diversity and job satisfaction within medical R&D teams specifically. This demonstrates a need for further research into how increased diversity may influence job satisfaction, reinforcing the importance of our study.

1.2 Research Purpose and Significance

In line with the problem statement, the purpose of this thesis is to investigate the effect of team diversity, as a composition of various individual attributes, on variables that have been demonstrated to contribute to job satisfaction within medical R&D teams. The impact of external factors that also influence the relationship from the perspective of the team will also be considered.

The significance of this thesis derives from providing the unique contribution of investigating composite team diversity and the effect on job satisfaction among R&D teams by quantitative and supplementary qualitative research methods, with a specific focus on Lund University. Previous studies on diversity and its effects on teams have only been based on one or two diversity attributes at a time, as discussed in chapter two. Therefore, the calculation of composite team diversity through the inclusion of five attributes further demonstrates the significance of this thesis. In addition, this thesis contributes by designing a method that can be used to calculate composite team diversity, to better understand levels of diversity in a team. Determining factors affecting job satisfaction will be beneficial in practice for both those included in this study and other similar teams, reinforcing the study's external validity. Furthermore, these results may enable companies and managers to facilitate and maximise the potential of their teams, gaining an improved understanding of the effects of diversity on job satisfaction, underlining the study's significance within the managerial research field.

1.3 Research Question

To obtain the purpose of this study, this thesis aims to answer the following research question:

- *What is the effect of diversity on job satisfaction among medical R&D teams at Lund University?*

We refer to the teams included in the study as medical R&D teams, however this extends to medical and biomedical R&D teams as they are both working under the Faculty of Medicine.

1.4 Research Design

This study investigates the relationship between team diversity and job satisfaction in medical R&D teams at Lund University. The main form of data collection was quantitative and collected via survey. The first stage of this study included reviewing the existing literature to be able to design and distribute a meaningful 25 question, multiple choice questionnaire to gauge levels

of employee satisfaction and the diversity of each team. Questions to identify moderating variables were also included. The results were then tested for any statistical significance. This data was supplemented by in-depth interviews to gain a more rounded picture of the structure, training and climate of the teams, alongside specific perceptions of team diversity.

A full description of the research design and methodology is provided in chapter 3.

1.5 Scope and Delimitations

The scope of this study has been limited due to time and budget constraints. For instance, a conscious decision was made to limit the scope of the study to medical R&D teams at Lund University. If there had been more time, we could have included another university's medical R&D teams. However, in order to have enough time to contact teams, present our research and ensure that the team members were given enough time to answer the questionnaire, as well as sufficient time for statistical analysis of the findings.

The boundaries of team diversity, the independent variable, have been fixed to include the five diversity attributes of personality, education, gender, age and nationality. As diversity can exist in many different forms, including other factors excluded from this thesis, a mixture of both surface-level diversity attributes and deep-level diversity attributes have been chosen to represent the actual level of diversity within the teams. However, due to the constraints on this thesis and the interest for as high a response rate as possible, these have been limited to the five factors mentioned above.

1.6 Outline

Following the first chapter, where the purpose and research question are introduced, the second chapter consists of the literature review regarding job satisfaction and workplace diversity. In the third chapter, the method and methodology are discussed. The empirical results are presented in the fourth chapter, followed by a discussion concerning these results in chapter five. The sixth chapter concludes the findings, and areas for further research are proposed. Following the sixth and final chapter, the reference list and appendix are presented.

2 Literature Review

2.1 Overview

Based on the purpose of the study being to investigate the relationship between the diversity and job satisfaction of medical R&D teams, it was important that a literature review was carried out in order for us as researchers to gain necessary information regarding diversity and job satisfaction. As argued by Sekaran and Bougie (2016), the purpose of the literature review is to gain an up to date understanding of the existing knowledge, in this case concerning job satisfaction and team diversity. In addition, the literature review ensured that we were not duplicating or reinventing existing research. The literature review also assisted in supporting the research process by providing further information regarding the study's main topics and thus providing useful insights on the topics crucial to this thesis. As Sekaran and Bougie (2016) suggest, the literature review helped contextualise the research in a broader academic context, helping relate the findings to previous research.

To collect data for the literature review, Google Scholar and Lund University's search engine, LUBsearch, were used to find peer-reviewed academic research papers. As seen in Figure 1, there are 396 existing articles that mention all three terms diversity, job satisfaction and R&D teams in Google Scholar. When this is narrowed down further to include the specifications of our study, including a focus on medical research, at a university, using a quantitative or mixed method approach, only four articles are returned, as seen in Figure 1. The first study found here investigated public sector R&D laboratories in India (Kumari, Sahney & Madhuka, 2018), the second focused on innovation within knowledge intensive consumer services, and therefore did not seem related to our study although they did use semi-structured interviews (Costa & Mendonça, 2019). The third and fourth articles were theses, the first being a review of the literature regarding teams working on new product development (Winkelhuis, 2015) and the second study of transformational leadership and its effects on organisational performance in Kenya (Owuor, 2018). The limited relevance of these articles suggests that there is a gap in the research, calling for this study to investigate the influence of diversity on medical R&D teams within a university environment.

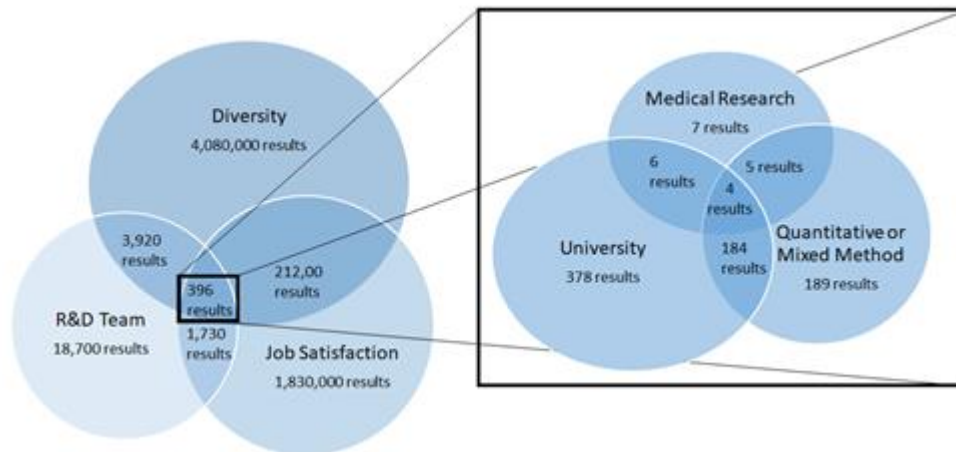


Figure 1 - Google Scholar search results for the terms “diversity”, “R&D team” and “job satisfaction”

2.2 Job Satisfaction

Within academia, job satisfaction has been investigated under the headings of job satisfaction, employee satisfaction and employee’s job satisfaction. As found in the literature, these are largely interchangeable terms, as will be discussed. Throughout this review, we will use the term which the article being referenced has used, and then give our reasoning for moving forward using the term job satisfaction.

There is a significant amount of research concerning employee and job satisfaction. Both terms have been referred to in research as dependent (Findler, Wind & Mor Barak, 2007; Hauret & Williams, 2020; Lau & Sholihin, 2005) and independent (Snipes, Oswald, LaTour & Armenakis, 2005; Yee, Yeung & Cheng, 2008) variables. According to Matzler, Fuch and Schubert (2004), employee satisfaction can be considered one of the primary drivers of quality, customer satisfaction and productivity and is therefore highly relevant for any organisation’s management. Previous research on job and employee satisfaction has been carried out in industries such as healthcare (Faragher, Cass & Cooper, 2005; Hayes, Bonner & Pryor, 2010), education (Skaalvik & Skaalvik, 2017) and public administration (Ellickson, 2002). There also appears to be a number of research papers that have analysed employee satisfaction within the hotel and tourism industry (Chi & Gursoy, 2009; Spinelli & Canavos, 2000).

2.2.1 Employee Satisfaction and Job Satisfaction

Several articles (Matzler, Fuch & Schubert, 2004; Spinelli & Canavos, 2000) do not clearly define job or employee satisfaction. Arguably this indicates that the two terms are understood as widely known within the literature. In addition, several articles use the terms job satisfaction and employee satisfaction interchangeably (Chi & Gursoy, 2009; Reidhead, 2020; Spinelli & Canavos, 2000). In other words, there does not seem to be a clear distinction between job satisfaction and employee satisfaction within the literature. However, the term job satisfaction is more commonly used. When searching for exact matches of “job satisfaction” using Google

Scholar, 1.87 million results were found and when searching for “employee satisfaction” 194 000 results were found. Furthermore, when searching for both “job satisfaction” and “employee satisfaction” together, 83 100 results were found on Google Scholar. This demonstrates that almost half of the results discussing “employee satisfaction” also mention “job satisfaction”. Similarly, when searching for “job satisfaction” in Google there are 14 300 000 results and when Googling “employee satisfaction” there are 3 820 000 results. Based on the higher prevalence of the use of the term job satisfaction, job satisfaction will be used throughout this thesis, unless the article being referenced uses a different term.

2.2.2 The Importance of Job Satisfaction

Understanding job satisfaction has been argued to be important from two main perspectives. Increased job satisfaction is important for utilitarian reasons, to ensure lower turnover and increased organisational effectiveness (Ellickson, 2002). It has also been motivated by humanitarian reasons, i.e., that employees ought to be treated well and that their psychological and physical well-being is ensured (Ellickson, 2002). In addition, Parvin and Kabir (2011) summarised that some researchers have argued that job satisfaction is important from a human needs perspective, following Maslow’s hierarchy of needs, these researchers have approached job satisfaction from the perspective of need fulfilment. These findings are in line with the idea that “[j]ob satisfaction is a fundamental aspect that determines the direction employees gravitate towards when speaking of appreciation, pay, advancement, and achievement of the goals that satisfy their desires” (Reidhead, 2020, p.434).

A number of studies demonstrate that job satisfaction is important for organisational commitment. For instance, Locke (1976) discusses the identified consequences of low job satisfaction, including decreased physical health, decreased mental health and increased absenteeism and turnover. In line with these findings, studies have found that higher job satisfaction can improve task performance, turnover and absenteeism (Judge & Kammeyer-Mueller, 2012) and job satisfaction has even been identified as a predictor of turnover (Wright & Bonett, 2007). Moreover, Lambert (2004) found in a study concerning job supervision, stress, variety, autonomy and job satisfaction that job satisfaction had the largest impact on organisational commitment, similar to Reidhead (2020), stating that job satisfaction is an indication of commitment. This is supported by the finding that satisfied employees are more loyal (Hunter & Tietjen, 1997, cited in Sageer, Rafat & Agarwal, 2012). Therefore, focusing on improving job satisfaction can assist with ensuring talent is retained in the team or organisation, reducing recruitment costs (Wright & Bonett, 2007).

Other implications of job satisfaction include output-oriented factors such as productivity and customer satisfaction. Hoboubi, Choobineh, Ghanavati, Keshavarzi, and Hosseini (2017) identified that increased job stress reduces job satisfaction, in turn negatively impacting workplace productivity. The effect of job satisfaction on productivity has also been supported by Hunter & Tietjen (1997, cited in Sageer, Rafat & Agarwal, 2012). Moreover, employee satisfaction is argued to be one of the most important drivers of customer satisfaction (Eskildsen & Dahlgard, 2000). These outcomes of job satisfaction underline the importance job satisfaction has for a given organisation.

2.2.3 Definition of Job Satisfaction

According to Saari and Judge (2004), Locke's (1976) definition of job satisfaction is the most commonly used, which is in line with our findings, for example having been used by Bergheim, Nielsen, Mearns and Eid (2015), Čuček and Kač (2020) and Weiss (2002). Locke states that job satisfaction is the "pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976, p.1300). The positive emotional state is commonly focused on, for example, satisfaction has been labelled as "the extent to which individuals express a positive affective orientation towards the work environment" (Schippers, Den Hartog, Koopman & Wienk, 2003, p.782).

However, Locke (1976) also refers to satisfaction as an emotional response, and the term has been broadened out to both positive and negative feelings towards one's job since. For example, Spector (1997), another highly cited author according to Aziri (2011), defines job satisfaction as "how people feel about their jobs and different facets of their jobs" (Spector 1997, p.2). Ellickson (2002) includes the negative side of job satisfaction within their definition, stating that it is an attitude based on an employee's negative or positive perception of their job and working environment. Similarly, Srimindarti, Oktaviani and Hardiningsih (2017) define job satisfaction as the negative or positive feeling towards their job. With slightly less focus on the type of feeling towards the job roles, Schermerhorn states that job satisfaction is "an affective or emotional response towards various aspects of an employee's work" (Schermerhorn, 1993 cited in Parvin and Kabir, 2011 p.115). Lee, Tan and Javalgi (2010) give a similar definition of job satisfaction regarding the emotional state that results from the job experiences of an individual. According to Armstrong (2006), job satisfaction can be defined as employees' attitude or feelings toward their work.

Further, Reilly (1991) defines the term job satisfaction "as the feeling that a worker has about his job or a general attitude towards work or a job and it is influenced by the perception of one's job" (Reilly, 1991 cited in Parvin & Kabir, 2011 p.115). Wanous and Lawler (1972) have a similar definition, referring to job satisfaction as "the sum of job facet satisfaction across all facets of a job" (Wanous & Lawler, 1972 cited in Parvin & Kabir, 2011 p.115). These existing definitions have been summarised by Parvin and Kabir (2011), describing job satisfaction as how content an individual is with their job. This definition has also been reiterated by Bergheim et al. (2015).

The above stated definitions can all be compared to Reidhead's definition of employee satisfaction being "emotional capacity linked with both, positive, as well as, negative elements, to every job experience" (Reidhead, 2020, p.436), supporting the interchangeability of the terms job satisfaction and employee satisfaction. Further, employee satisfaction has been defined as the "terminology used to describe whether employees are happy, contented and fulfilling their desires and needs at work" (Sageer, Rafat & Agarwal 2012, p.32), which can be compared to Locke's (1976) definition of job satisfaction.

As the aforementioned definitions all are relatively similar in highlighting that job satisfaction is related to the negative or positive feelings that an employee has toward their job, Parvin and Kabir's definition of job satisfaction has been chosen to be used in this thesis. This is due to the fact that Parvin and Kabir's review of the literature has taken into account many previous definitions, as mentioned above, and combined them to make one definition. The definition of job satisfaction that will be used throughout this thesis is: "how content an individual is with his or her job" (Parvin & Kabir, 2011, p.113).

2.2.4 Factors Affecting Job Satisfaction

Following the different definitions of job satisfaction there are also a number of different understandings as to the factors that affect job satisfaction. According to Sageer, Rafat and Agarwal, employee satisfaction is affected by organisational development, job security, work tasks, guidelines regarding compensation and benefits. Alongside this, promotion and career development opportunities have been stated to increase employee satisfaction (Sageer, Rafat & Agarwal, 2012).

In relation to job satisfaction, Spector (1997) states that pay, promotion, supervision, benefits, contingent rewards, operating procedures, co-workers as well as nature of work are factors that contribute to job satisfaction. More recently, Rue and Byars (2003, cited in Aziri, 2011) state that the factors that contribute to job satisfaction include the manager's concern for people, job design, compensation, working conditions, social relationships, perceived long-range opportunities, perceived opportunities elsewhere and the alignment of levels of aspiration and need achievement. Lambert and Hogan (2009) include work environment variables such as dangerousness, role ambiguity, role conflict, overload and input into decision-making process, as well as organisational fairness among factors that affect job satisfaction. Lambert and Hogan also underline a number of personal factors, such as gender, age, tenure, position, educational level and race, that could affect job satisfaction.

Hayes, Bonner and Pryor (2010) summarised the factors that contribute to job satisfaction of nurses in small hospitals, by dividing them into intrapersonal factors, interpersonal factors and extrapersonal factors. Some of the intrapersonal factors included age, behavioural disengagement, education, experience, positive and negative affectivity and positive reframing. Some of the interpersonal factors identified were autonomy, control or responsibility, interactions, job content, professional relationship, professional status and support. The extrapersonal factors described include pay, opportunities, variety, workload.

Similar to Hayes, Bonner and Pryor's (2010) interpersonal factors, Findler, Wind and Mor Barak (2007) identified several factors that can influence job satisfaction, including inclusion, stress, organisational commitment, social support, well-being, and fairness. These findings have been supported by Acquavita, Pittman, Gibbons and Castellanos-Brown (2009), who identified that the increased perception of inclusion and social support had a significant positive correlation with job satisfaction. The influence of stress on job satisfaction discussed by Findler Wind and Mor Barak (2007) has also been supported by Hoboubi et al. (2017), as a negative relationship was identified. Diekmann, Barsness and Sondak (2004) conclude that fairness is positively related to attitudes in the workplace, including job satisfaction, and that job satisfaction in turn impacts organisational commitment. Further, as Findler, Wind and Mor Barak state, there is a reciprocal relationship between organisational commitment and job satisfaction (Findler, Wind & Mor Barak, 2007). Conflicting with Findler, Wind and Mor Barak's (2007) identification of the influence of well-being on job satisfaction, well-being has also been used as a measure of job satisfaction (Waters, 2012).

2.3 Workplace Diversity

In broad terms, diversity is about the different dimensions of identity such as culture, age, religion, sexuality, gender and disability. These factors of diversity can be used to distinguish individuals from each other (Syed & Tariq, 2017). Diversity within the workforce consists of visible differences such as gender and age, also known as surface-level diversity, and non-visible differences among employees, including personality and work style, known as deep-level diversity (Cunningham & Sagas, 2004; Kandola & Fullerton, 1998 cited in Syed & Tariq, 2017). As globalisation continues, diversity within the workplace is becoming more common (Cegarra-Navarro et al., 2021; Martin, 2014). In addition, effects demonstrating varied and creative solutions make diverse teams more desirable (Hunt, Layton & Prince, 2015). Therefore, it can be argued that understanding the way that diversity affects teams is highly important.

2.3.1 Effects of Workplace Diversity

Diversity in the workplace is often considered in two opposing views, one stating that diversity of a workplace can include benefits such as improved innovation and team performance, the other suggesting that diversity can have a negative impact due to causing problems including social division (Reagans & Zuckerman, 2001). Research into diversity in the workplace is commonly completed to identify how diversity can improve innovation (Basset-Jones, 2005; Lorenzo, 2017) productivity (Dale-Olsen & Finseraas, 2020; Ilmakunnas & Ilmakunnas, 2011), decision making (Gompers & Kovvali, 2018) and performance (Díaz-García, González-Moreno & Sáez-Martínez, 2013). As described by Greenberg, the benefits include a more comprehensive selection of viewpoints, increased adaptability, effective execution, and a broader range of services. Arguably, these benefits are not without challenges (Greenberg, 2004). Increased diversity has been identified to cause potential conflict and distrust within teams due to difficulties with communication and coordination in diverse teams (Díaz-García, González-Moreno & Sáez-Martínez, 2013). These challenges are often discussed in an attempt to increase the output of teams and organisations (Hewlett, Marshall & Sherbin, 2013; Prieto, Phipps & Osiri, 2009).

Research into diversity in the workplace has been investigated to discover whether there are any benefits regarding increased innovation. Companies with a more even gender balance are often considered more innovative than companies where one gender is more dominant (Østergaard, Timmermans and Kristinsson, 2010). Increased creativity and innovation have also been reported by Martinez, Zouaghi and Garcia-Marco (2016) and Kim and Song (2020) when a greater diversity of skills, academic background, gender and age exist. It has also been discussed that heterogeneous teams may experience higher turnover rates, which in turn may lead to increased innovation due to the broader range of perspectives and the need for adaptation to the constant rotation of team composition (Jackson, May & Whitney, 1995).

In addition, diversity has been viewed as a factor contributing to other effects in workplace teams, for example, greater productivity and decision making. Age diversity is stated to have a positive effect on productivity (Ilmakunnas & Ilmakunnas, 2011). Language diversity has also been noted as an important factor for workplace productivity, as investigated by Dale-Olsen and Finseraas (2020). Cultural diversity has been argued to improve decision making, but when

this diversity is unsuccessfully managed, the high level of diversity can cause negative effects on decision making (Williams & O'Reilly, 2003). Gender diversity in decision-making roles has been found to be associated with better organizational governance and social responsibility (Fine, Sojo & Lawford-Smith, 2019; Martinez, Zouaghi & Garcia-Marco, 2016).

Evidence suggests that diversity is positively correlated with both team performance (Díaz-García, González-Moreno & Sáez-Martínez, 2013), and organisational performance (Hunt, Layton & Prince, 2015; Prieto, Phipps & Osiri, 2009). The reasoning here being that diversity contributes to the ability of the team to generate more diverse solutions when faced with a problem (Díaz-García, González-Moreno & Sáez-Martínez, 2013). The positive effects of diversity have been identified to be reflected in financial performance, as in 2015, McKinsey reported that companies among the top 25% most diverse, in terms of ethnic diversity among employees, are 21% more likely to have above average financial performance, measured by EBIT margin (Hunt, Layton & Prince, 2015). Moreover, a 2018 Harvard Business Review article stated that researchers have struggled to determine a causal relationship between composite diversity (encompassing factors such as gender, ethnicity, schooling and work history) and profitability or market share (Gompers & Kovvali, 2018). However, when this relationship was investigated in the venture capitalist industry, it was concluded that diversity significantly improves financial performance (Gompers & Kovvali, 2018).

In contrast, a number of studies have concluded that diversity has led to increased conflicts and decreased cohesiveness (Reagans & Zuckerman, 2001; Williams & O'Reilly, 2003). Furthermore, it has been identified by Roberge and van Dick (2010) that there has been difficulty determining consistent causal relationships between diversity and performance, based on a number (4) of reviews and meta-analyses. Horwitz and Horwitz (2007) conclude that biodemographic diversity is thought to have a limited impact on team performance. As described, there is a large amount of conflicting research into diversity in the workplace.

2.3.2 Diversity in R&D Teams

In terms of diversity within R&D teams, Gassmann (2001) states that research and development is becoming more and more internationalised due to a variety of environmental forces that influence the innovation process. R&D teams are often referred to as “heterogeneous” or “international” as various types of diversity are commonly found within them (Ambos & Schlegelmilch, 2004; Cegarra-Navarro et al. 2021). As outlined below, several of the previously stated effects of diversity have been found to apply not only to teams in general, but also specifically in R&D teams.

Zouaghi, Garcia-Marco and Martinez (2020) describe the benefits for diversity specifically in R&D teams, investigating diversity of gender, skills and educational background. The results of this study included that diverse R&D teams contribute to increased innovation, creativity and productivity. However, a limit to the benefits of heterogeneous R&D teams was identified; if the team had a very high level of diversity, negative effects including issues with cohesion, decision-making and team commitment were found. These results were mirrored in Hoisl, Gruber and Conti (2016), where diversity of job-related experience is considered in R&D teams and it was concluded that under competitive environments, the relationship between diversity and performance was found to be an inverted U-shape. These results suggest that there are limits to how beneficial diversity can be in this setting. However, the way in which diversity has been

defined is limited to previous working experience instead of accounting for the demographic diversity of the team members, leaving a gap in the literature for further investigation.

A variety of the effects of diversity have been investigated specifically within R&D teams. For example, gender diversity has been demonstrated to have an impact on innovation within R&D teams in manufacturing firms (Martinez, Zouaghi & Garcia-Marco, 2016). Diversity and its contribution to network heterogeneity is important in R&D teams compared to other professions due to the opportunity to use communication links to make further progress within the field of research (Reagans & Zuckerman, 2001). This network heterogeneity is linked to increased performance and productivity in R&D teams. Martinez, Zouaghi and Garcia-Marco (2016) conclude that the benefits of diversity within R&D teams are due to the differing ways in which information is processed by individuals within the team.

2.4 Workplace Diversity and Job Satisfaction

Diversity and job satisfaction has often been investigated from the perspective of the individual; whether a person's individual attributes affect how satisfied they are in their role (Campbell, 2011; Cunningham & Sagas, 2004; Findler, Wind & Mor Barak, 2007). For example, Williams and O'Reilly (2003) concluded that age diversity decreased satisfaction, particularly in individuals who were most different to their teams. This was also echoed in the same article in regard to gender diversity; greater gender diversity was concluded to have a negative effect on those who identified as male when they were in the minority.

Workplace diversity has been stated to have a negative impact on satisfaction (Schippers et al. 2003), and in terms of cultural diversity, this has also been found to have a negative effect on job satisfaction via quantitative analysis (Hauret & Williams, 2020). Contrastingly, Stahl, Maznevski, Voigt and Jonsen (2010) analysed the effects of cultural diversity on team satisfaction and concluded that cultural diversity positively influences satisfaction. However, with a specific investigation into age and educational diversity, no significant correlation was discovered (Schippers et al. 2003).

The demographic diversity of managers and the effect this has on their team's satisfaction has been found to have an inverse relationship (Choi, 2012). However, when there has been higher racial diversity of the organisation as a whole, workers classed as minorities have been found to be more satisfied within their roles with increased diversity within management (Choi, 2012). Acquavita et al. (2009) discovered a heavy emphasis on inclusion as a mediating variable between diversity and job satisfaction. By reviewing the literature from the viewpoint of individual diversity, Findler, Wind and Mor Barak (2007) identified relationships between gender, age, tenure, job type and education diversity with job satisfaction. On top of this, factors that mediate this relationship were also discussed. These mediatory factors are fairness, inclusion/exclusion, social support, stress, well-being and organisational commitment (Findler, Wind & Mor Barak, 2007).

Aside from the articles specifically discussing job satisfaction, the articles below discuss the relationship between diversity and employee satisfaction, as mentioned previously, these terms are largely interchangeable. Peccei and Lee (2005) found that high percentages of gender

similarity do not correlate with increased employee satisfaction. Therefore, investigating diversity as larger than purely gender may assist in the understanding of other results that state otherwise. Although Campbell (2011) focused on the effects that one's gender, race or ethnicity has on job satisfaction, the findings demonstrate that in some cases, a person's gender, race or ethnicity does affect job satisfaction. However, Campbell concludes that these three factors are not reliable indicators of job satisfaction at large. In addition, Cunningham and Sagas (2004) research the effects of both surface-level diversity and deep-level diversity on job satisfaction for individual employees. Their findings demonstrate that individuals different from others, in relation to surface-level and deep-level diversity, experience less job satisfaction and also have higher turnover rates.

The previously mentioned lack of literature investigating the relationship between composite team diversity, taking different attributes into account, and job satisfaction demonstrates a gap in the literature, calling for our study. In light of this, Stahl et al. (2010) also state that the relationship between diversity and team satisfaction is worth exploring further.

2.5 Diversity Management

The seemingly positive effects of diversity are not thought to be accessed without counteracting the negative effects of diversity (Williams & O'Reilly, 2003), which Syed and Tariq (2017) argue can be done through adequate diversity management. Diversity management can be defined as "a set of formalized practices developed and implemented by organizations to manage diversity effectively among all organizational stakeholders" (Yang & Konrad, 2011, p.8). One form of diversity management may be diversity training, which can take a variety of forms. According to Köllen, based on Alhejji, Garavan, Carbery, O'Brien and McGuire (2016) and Pendry, Driscoll and Field (2007) the aim of diversity training is to raise the "awareness of managers or employees in terms of what stereotype-based diversity-related biases might exist and, thus, at facilitating intergroup relations within the workforce" (Köllen, 2019, p.2).

As globalisation continues and consequently, diversity in the workplace is increasing (Cegarra-Navarro et al. 2021; Martin, 2014), diversity management is becoming more important for managers to be able to make the best possible use of the global workforce (Rosenzweig, 1998 cited in Syed & Tariq, 2017). Arguably, diversity is crucial for organisations as it can positively impact knowledge transfer, innovation, motivation and productivity, and overall performance (Syed & Tariq, 2017). This calls for diversity management to leverage the potential benefits of diversity. Syed and Tariq (2017) stress the importance of managing workplace diversity, as the melting pot approach of assimilating employees of different nationalities will positively impact performance. However, it is also highlighted that poorly designed training programs may be counterproductive (Nishii & Özbilgin, 2007 cited in Syed & Tariq, 2017).

Diversity management is important to ensure an inclusive culture that satisfies the demands and expectations of a diverse workforce to simultaneously enable all employees' fullest contribution for the organisation to reach its goals (Syed & Tariq, 2017). An essential part of diversity management is that leaders have the skills needed to succeed with managing workplace diversity, including a global mindset, cultural intelligence and cultural agility (Collings Wood & Caligiuri, 2015 cited in Syed & Tariq, 2017). These leaders then need to initiate adequate diversity workshops and training to manage workforce diversity (Syed & Tariq, 2017).

Diversity management plays an important role in ensuring that team members learn the value of diverging perspectives (Bhagat, Triandis, & McDevitt, 2012, cited in Syed & Tariq, 2017).

However, a number of researchers critique the notion that diversity management has an adequate, positive influence and ensures that full benefits of diversity are reached. For instance, Tanton's (1994) findings suggest that the discourse used as part of the diversity management to develop women's presence instead, unintentionally, perpetuated gender inequalities and thus reinforced power structures in the workplace (Tanton, 1994 cited in Lorbiecki & Jack, 2008). In addition, Syed and Tariq (2017) underline that poorly designed diversity training may be counterproductive. In contrast to research demonstrating that diversity management impacts team outcomes, several reviews and meta-analyses, as described in Yang and Konrad (2011), demonstrate that the relationship between diversity management and team outcomes is often non-existent.

Cox states that organisations must allow all employees to bring and show their diversity in the workplace and thus not require employees to "suppress important identities to assimilate to the dominant organisational culture" (Cox 1993, cited in Yang & Konrad 2011, p.7). Kossek and Pichler go on to determine three forms of diversity management that the authors argue to be most effective to achieve the desired states. Diversity management must (1) promote perceptions of justice and inclusion, (2) work to reduce discrimination, (3) enhance financial competitiveness (Kossek & Pichler, 2006, cited in Yang & Konrad, 2011). Based on this literature review, it is clear that diversity management is an important variable to account for in this study as it can influence whether team diversity is a strength or a drawback.

2.6 Team Building

Perhaps somewhat similar to diversity training, team building can be defined as interventions aiming to improve relations between co-workers in the team, clarifying roles, solving task related problems as well as improving interpersonal issues that may challenge the team functioning (Klein, DiazGranados, Salas, Le, Burke, Lyons & Goodwin, 2009). Team building can take the form of formal and informal activities (Klein et al. 2009). Based on this definition, in this thesis, we include both formal activities aiming to improve team interactions, such as team building exercises including problem-solving exercises, alongside informal activities, for example dinners or other events where the team spends time together outside of the working environment.

Team building was concluded to have a positive moderate effect on team outcomes, based on data from 1,562 teams. More specifically, team building has a strong impact on a team's effectiveness and process outcomes (Klein et al. 2009). Moreover, in a study based on interviews and questionnaires sent to participants of 41 different team building initiatives it was found that team building was beneficial from a financial perspective as well as for the project results. In addition, benefits for future working relationships were reported (Albanese, 1994).

In relation to team building and job satisfaction specifically, Amos, Hu and Herrick (2005) found that team building positively affected communication and job satisfaction among nursing staff included in the study. The reason being that team building enabled the team leader to strengthen the communication and interpersonal relationships so that the team could function more cohesively (Amos, Hu & Herrick, 2005). Furthermore, Birx, LaSala and Wagstaff (2011)

determined a positive relationship between team building in the form of retreats and job satisfaction immediately following the retreat. However, when the same data was collected at a later stage, the positive effects had not prevailed (Birx, LaSala & Wagstaff, 2011).

2.7 Literature Review Conclusion

Based on the literature review, it appears that diversity is common in R&D teams and that this can contribute to factors such as innovation and performance and is an interesting topic to further investigate. To the best of our knowledge, there is little academic research that has analysed the direct relationship between diversity and job satisfaction.

As suggested by Zouaghi, Garcia-Marco and Martinez (2020) further research needs to be investigated into the effect of diversity on performance, considering other types of diversity than only gender, skills and education as in their paper, for example including age or race, experience or personality. This, however, is in the context of firm performance, of which job satisfaction is considered a contributing factor (Bakotić, 2016), however this is said to be insufficiently researched. Therefore, looking into the relationship between diversity and job satisfaction as an intermediate step towards improving organisational performance.

Following the literature review, different types of diversity have been shown to influence job satisfaction (Williams & O'Reilly, 2003; Cunningham & Sagas, 2004; Acquavita et al. 2009; Campbell, 2011; Choi, 2012). However, as Findler, Wind and Mor Barak (2007) identified, there are several mediating factors between diversity and job satisfaction, including inclusion/exclusion, stress, team commitment, social support, fairness and well-being. As these have been identified to be influential on an individual level, we understand these factors to be applicable to composite team diversity. Moderating variables that influence the relationship include the time spent with the team and management of diversity. Based on the identified relationships, the theoretical framework was created (Figure 2).

The dependent variable of job satisfaction is hypothesised to be influenced by team diversity through the mediating variables of inclusion, stress, team commitment, social support, fairness and well-being, as described in section 2.2.4. The objective of defining the theoretical framework was to help guide the research to answer the research question of *what is the effect of diversity on job satisfaction among medical R&D teams at Lund University?* and reach the purpose of this thesis.

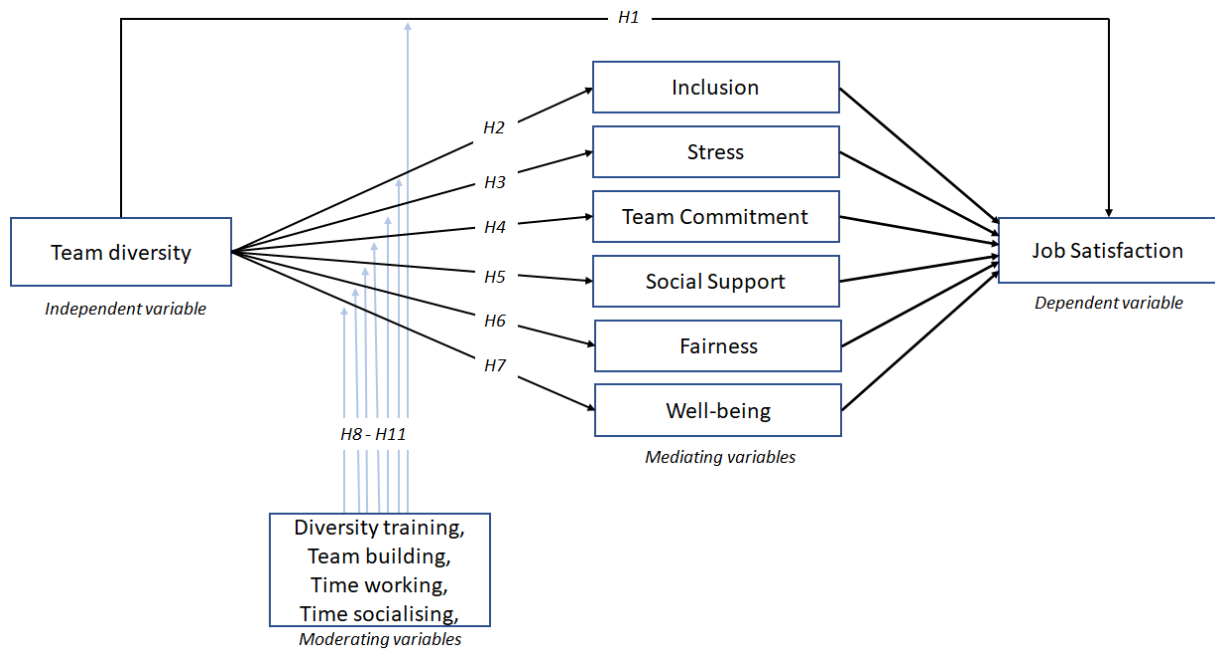


Figure 2 - Schematic diagram of the relationship between team diversity and job satisfaction.

The definitions of the mediating variables depicted in the framework have all been adapted from Findler, Wind and Mor Barak (2007) as this is the primary influence for our theoretical framework and are further clarified below.

Inclusion is defined as the degree to which “individuals feel a part of critical organizational processes”, with the main focus on decision making and information networks (Findler, Wind & Mor Barak, 2007, p.72). *Stress* is defined as “incompatible job expectations from different sources”, including role ambiguity in terms of “lack of clarity of job expectations”, and role overload meaning “too much work to do and not enough time” (Findler, Wind & Mor Barak, 2007, p.72). *Team commitment* is defined as Findler, Wind and Mor Barak (2007) define organisational commitment as “employees’ emotional attachment to, identification with, and involvement in, the organization” (Findler, Wind & Mor Barak, 2007, p.73). This variable has been adapted from organisational commitment as the teams are the focus of our study. *Social support* is, according to Findler, Wind and Mor Barak, “the extent to which people around the employee provide emotional and tangible support” (Findler, Wind & Mor Barak, 2007, p.72). Due to the lack of a precise definition of *fairness* given by Findler, Wind and Mor Barak (2007), the definition used in this thesis is equivalent to the definition of workplace fairness as described by Bettencourt and Brown. The definition being “employee perceptions of the “rightness” of outcomes, procedures and interactions” (Bettencourt & Brown, 1997, p.39). This also aligns with the definitions given in Diekmann, Barsness and Sondak (2004), Fassina, Jones and Uggerslev (2008) and Camgoz and Karapinar (2011). *Well-being* is defined as “a personal state characterized by good mental health and positive feelings overall” (Findler, Wind & Mor Barak, 2007, p.73), however, in Findler, Wind and Mor Barak, the term general well-being is used.

2.8 Hypotheses

In relation to our purpose and research question, eleven hypotheses have been formulated. The hypotheses are based on the findings from the literature review. In relation to falsifiability, Popper, cited in Sekaran and Bougie (2016), states that a hypothesis cannot be confirmed if there is no possibility that future research can prove it to be incorrect. Therefore we have formulated falsifiable hypotheses. Due to the conflicting existing literature and the lack of investigation into composite team diversity and its effects on job satisfaction, non-directional hypotheses have been developed, in line with suggestions from Bougie and Sekaran (2020). Based on this and in reference to the literature review the following hypotheses were formulated.

Main hypothesis:

H1: Composite team diversity has an effect on job satisfaction within medical R&D teams at Lund University.

Hypotheses based on the mediating variables:

H2: Composite team diversity has an effect on an employee's feeling of inclusion within medical R&D teams at Lund University

H3: Composite team diversity has an effect on an employee's feeling of stress within medical R&D teams at Lund University

H4: Composite team diversity has an effect on an employee's team commitment within medical R&D teams at Lund University

H5: Composite team diversity has an effect on social support within medical R&D teams at Lund University

H6: Composite team diversity has an effect on an employee's feeling of fairness within medical R&D teams at Lund University

H7: Composite team diversity has an effect on an employee's well-being within medical R&D teams at Lund University

Hypotheses based on the moderating variables:

H8: Time spent on diversity training has an effect on job satisfaction.

H9: Time spent on team building has an effect on job satisfaction.

H10: Time spent working with the team has an effect on job satisfaction.

H11: Time spent socialising with the team has an effect on job satisfaction.

3 Methodology

3.1 Research Approach and Design

This study's research approach mainly adheres to the positivist research philosophy, which aligns with the quantitative, measurable method applied in this study. At the same time, we recognise the limitations of this thesis to the extent that we believe an objective, entirely generalisable truth will not be reached, especially as factors such as satisfaction may be hard to objectively measure. Therefore, the research approach can be understood to be leaning towards critical realism, which is argued by (Bougie & Sekaran, 2020) to be an intermediary viewpoint situated between positivism and constructionism. Critical realists believe that objective truth exists but simultaneously reject the ability to objectively measure reality, which is especially true for phenomena such as satisfaction, which this study intends to measure (Bougie & Sekaran, 2020). To conclude, we apply a positivist approach but recognise that we do not have a fully positivist standpoint. We believe that such an approach would not capture the whole truth, to the extent that we have included both quantitative and qualitative methods to reach the research purpose of this study. The mixed methods approach is applied based on the understanding that objective truths can be obtained while considering that an objective truth may not include enough perspectives to be the whole truth.

The hypothetico-deductive method of this study offers a systematic approach to generate new knowledge, testing a theoretical framework by conducting an empirical study. The fundamentals of hypothetico-deductive is that the researchers initially have a theory or a theoretical framework that is tested by an empirical study (Bougie & Sekaran, 2020). The research was approached with a broad view and was then narrowed down, by starting with the general theory of diversity influencing job satisfaction, then formulating hypotheses. Data analysis was then carried out to test the hypotheses, with the final part of this deductive research consisting of analysis of observations to test the hypotheses, allowing for confirmation or rejection of the hypotheses.

3.2 Unit of Analysis

In line with the purpose of the study, the participants were members of Lund University medical research teams. Lund University was chosen due to the researchers being under the same university as the participants of the study and therefore it is more likely that a greater number of responses will be obtained. Under the Faculty of Medicine, the goal of the teams is to "increas[e] knowledge of high relevance to human health" (Lund University, online, n.p). This research is completed by undergraduate students, graduate students and both full and part-time employees, reaching a total population of 5 800 people (Lund University, online). From 469 teams identified to exist under the Faculty of Medicine, 213 teams were excluded due to not

meeting the criteria below, leaving 256 teams suitable for this study. Of these teams, 200 were randomly selected and contacted.

The horizontal diversity of the teams was investigated instead of analysing the diversity of the managers or leaders compared to the employees within the team. This allowed for the managers to be taken into account within the team as they also contribute to the team environment. Alongside this, this method of analysis allows for a greater level of anonymity within the teams and due to the varied structure between medical research teams, allows for consistency between our team evaluations.

The upper limit of 19 team members was chosen due to the previously mentioned irregular structure of medical R&D teams, and therefore seminar groups and discussion groups could be excluded from the sample. This upper limit also helped ensure that difficulties of interaction that may exist due to the large number of people within a team would not skew the results.

Criteria for participation:

- The team must be working under the faculty of medicine in the field of biomedical or medical science.
- There must be between 3 and 19 team members.
- The research leader must be employed by Lund University and have their own research team.

3.3 Data Collection Method

Data was collected using a mixed method approach, with a survey via online questionnaire being the main form of data collection. The survey was supplemented by conducting a number of interviews, to gain further insight into the teams being analysed. Due to only asking about existing conditions, and the lack of manipulation of the environment, the method can be classed as minimal interference as defined by Bougie and Sekaran (2020). This will help us reach our research purpose without affecting the data too much to be able to draw reliable conclusions.

All teams were initially contacted by email, with the research topic and purpose presented as well as an explanation of what their participation would entail. In addition, we offered to present the research topic and describe the level of input needed from the participants. This was done to build trust between the researchers and participants, particularly as some of the data collected could be considered sensitive. The level of trust was important in our process of gaining a larger number of participants as after these meetings, there was generally a higher level of interest among those teams to which we presented our research project.

3.3.1 Survey

Based on the purpose, as well as this study's research question, the effect of diversity on satisfaction could be determined by the use of a quantitative method where data was collected via an online questionnaire. That way a correlation could later be determined helping reach the

research purpose. In order to collect primary data regarding diversity and job satisfaction from each R&D team, an online questionnaire was designed. This seemed an efficient way to collect data and as Bougie and Sekaran (2020) state, surveys are commonly used to measure job satisfaction. Appendix A contains a copy of the questionnaire used. The design of the questionnaire was based on the information gained from the theoretical framework (Figure 2), with inspiration drawn from existing studies (Findler, Wind & Mor Barak, 2007; Levi & Slem, 1995). The questionnaire was divided into four sections:

1. Measurements of job satisfaction (dependent variable)
2. Time spent with the team (moderating variables)
3. Team diversity (measuring perceptions of diversity)
4. Individual attributes that contribute to the team diversity index (independent variable)

The sections mentioned above were divided and arranged in this way to try and reduce bias that the act of completing the questionnaire may introduce to the responses. For example, had the questionnaire been designed with the diversity attributes listed before the perception of diversity of the team, this could introduce bias and alter responses based on the diversity attributes that were then listed. The order of the questions was similarly considered for job satisfaction. In relation to this, how an individual respondent interprets the Likert scale will affect an answer, meaning that an answer “4” could mean being very satisfied whereas someone else, who is equally satisfied would answer “5”.

Section 1 of Questionnaire: Job Satisfaction

A 5-point Likert scale was used to measure both “job satisfaction” alone (question 1 and 12) and mediating variables that were identified in the literature review. A 5-point, symmetrical Likert scale was used to ensure participant independence and the ability to choose a neutral option if this reflected their feelings towards the statement (Joshi, Kale, Chandel & Pal, 2015). This scale has also been used previously in studies of job satisfaction, for example Bergheim et al. (2015) and Chi and Gursoy (2009).

The operationalisation and reasoning behind the measurement of the definition of job satisfaction through the mediating variables can be seen, in Appendix B. The questions were mostly inspired by a review of the existing literature discussing diversity and job satisfaction from the perspective of an individual by Findler, Wind and Mor Barak (2007). It is stated that the factors that mediate the relationship between diversity and job satisfaction include: fairness, inclusion/exclusion, social support, stress, well-being and organisational commitment. However, one additional question, not inspired by Findler, Wind and Mor Barak (2007) but from Levi & Slem (1995) was included due to various articles discussing how conflict in the workplace can affect job satisfaction. Questions about pay and job tasks were excluded due to the effect that the hierarchy in the team could have on these variables, for example, a group leader may be more satisfied with their job tasks as they have greater influence on the specific research that is undertaken, in comparison to a lab assistant or similar. In addition, including too many questions in the questionnaire would have increased the length, decreasing the likelihood of a high response rate.

Two overriding questions regarding job satisfaction were included, question 1 and question 12. Question 1 asked whether the employee was satisfied with their job, inspired by the previously stated definition of job satisfaction. Question 12 was included to apply the measurement of Net Promoter Score (NPS) to our study. Although NPS is mainly used to measure customer satisfaction, NPS has also been used by for instance the National health services (NHS) to measure patient satisfaction (Hamilton, Lane, Gaston, Patton, MacDonald, Simpson & Howie, 2014). NPS measures the satisfaction by asking someone, for instance a patient, employer or customer how likely they are to recommend a company or organisation to friends and family (Hamilton, Lane, Gaston, Patton, MacDonald, Simpson & Howie, 2014). Although NPS is more commonly used to measure customer satisfaction, it can be argued that as the likelihood of recommending a company or organisation is understood to be a good measure of satisfaction, NPS can be used to measure job satisfaction too.

The specific questions included in the questionnaire related to job satisfaction, the factors investigated through each question as well as reference to the source of inspiration can be found in Appendix B.

Section 2 of Questionnaire: Time Spent With Team

The purpose of asking how much time the team spends together was to investigate the moderating variables that may affect the relationship between team diversity and job satisfaction. This was done by measuring time spent with the team in a professional or social setting, time spent on team building and time spent completing diversity training.

Section 3 of Questionnaire: Perception of Diversity Within Team

The third section of the questionnaire measures the perception of diversity of the team, and whether the respondents view diversity as beneficial or challenging. One question has a positive connotation and one has a negative correlation to try and gauge how people within each team perceive diversity.

Section 4 of Questionnaire: Diversity

The specific diversity attributes to encompass the diversity index were chosen so that a variety of attributes that contribute to diversity are included (Figure 3). Age, gender and nationality were chosen to represent surface-level diversity attributes, and personality and education were chosen to represent deep-level diversity. Different weights for each variable were considered, however, there is no clear understanding of how each variable influences the team culture and therefore all factors were kept equally weighted.

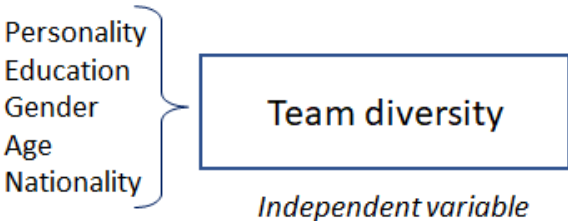


Figure 3 - Factors taken into account to create the team diversity index.

Ideally, a greater number of diversity attributes would have been considered, however, it was decided that gaining more information by increasing the number of questions included in the questionnaire to above 25 would likely reduce the number of respondents and therefore reduce the data available to us. This was particularly important within the medical R&D field that we focused on as it is common that they have been reported to face a high level of time pressure (Hoisl, Gruber & Conti, 2016). Therefore, we did not want a questionnaire that would take longer than 10 minutes, as this has been found to be the median ideal length for an online questionnaire (Revilla & Ochoa, 2017). Prior to sending out the questionnaire, it was tested on six randomly selected people within our network (friends, family) and the average time taken to complete the questionnaire took between 3 and 6 minutes.

3.3.2 Interviews

Based on the purpose of the study, which was to investigate the relationship between the diversity and job satisfaction of medical R&D teams, the primary quantitative data was supplemented with seven interviews. The interviews were used to reveal additional extraneous variables outside of those included in the questionnaire that may influence job satisfaction. The interviews also enabled further understanding regarding the team culture, team structure and individual experiences that the questionnaire did not allow for. For example, how the team handles diversity and any resulting conflicts or whether differences among team members are discussed.

In order to identify potential interviewees, a final section in the questionnaire offered respondents the chance to leave their email address or contact us directly if interested in taking part in an interview. For the teams who were interested in a presentation of the research before completing the survey, team members were also asked here to contact us directly if they were interested in taking part in an interview at these information sessions. Allowing us to interview team leaders and team members.

Semi-structured interviews were chosen as they allow flexibility during the interview, without the interview losing focus. This allowed for us to prepare the questions in advance and plan time for each question whilst also allowing for adaptation to different or unexpected responses. According to Sreejesh Mohapatra and Anusree, the semi-structured approach also allows for mutual interaction between the interviewer and the interviewee which helps create a rather informal atmosphere which in turn can lead to an atmosphere where the interviewee feels okay about discussing more sensitive topics (Sreejesh Mohapatra & Anusree, 2014).

In addition, to ensure greater value from interviewees' answers, the interviewer can pose probing questions or apply a probing technique to encourage the interviewee to share further details (Sekaran & Bougie, 2016). During the interviews, a number of probing questions were also included in the interview template (Appendix C). Furthermore, as our point of interest for the interviews was diversity and job satisfaction, we made sure to be up to date on research regarding teams, employee satisfaction and diversity and its effects on teams. Alongside this, repeating answers and using silence were used to prompt further expansion on the answer, as recommended by Sekaran and Bougie (2016). Therefore, greater insight and deeper understanding of the interviewee's answers were gained.

Sreejesh, Mohapatra and Anusree (2014) also mention a number of disadvantages with using semi structured interviews, one of them being that the lack of structure in the interview guide can create biases, and the individual interviews can be influenced by the interviewer which may skew the results (Sreejesh, Mohapatra & Anusree 2014). In addition, the time needed for the interviews meant that not as many interviews were able to be held (Sreejesh, Mohapatra & Anusree, 2014). As the purpose of the interviews was to supplement our main quantitative method of data collection, not as many interviews were necessary, reducing the workload.

The interviews ranged from 15 minutes to 44 minutes with the average length being 31 minutes. All interviews were conducted via Zoom. Both authors were present during the interview, but responsibilities were divided. One author led the interview and held the role of interviewer, and the other performed the role of an interview assistant to ask extra follow up questions, record the interview and take notes regarding interesting topics that could be investigated further after transcribing the recording. The interviews were recorded so that the focus during the interviews was maintaining the flow of discussion. This method also meant that we could reflect over the way we, as interviewers, asked the questions, helping to ensure we were not introducing interviewer bias (Sreejesh, Mohapatra & Anusree, 2014). This also allowed transcription of the interviews, leading to more accurate reporting and analysis of the content, from these transcriptions, the seven interviewees were anonymised as interviewee A-F. Although recording the interviews can make interviewees uncomfortable it is arguable that by recording, the interviewer and interview assistant could pay more attention to making the interviewee feel comfortable rather than having to focus on notetaking.

3.4 Data Analysis Method

3.4.1 Survey

After collecting the data, we calculated the responses to determine the composite diversity of each team, as well as the level of job satisfaction, in order to uncover the effect of diversity on job satisfaction. All questionnaire responses were collated in Excel with the indices for the different variables being calculated as detailed below.

Independent Variable - Team Diversity Index

To calculate the diversity index of each team, Blau's (1977) Index of Heterogeneity was utilised and seen in Zouaghi, Garcia-Marco and Martinez (2020) and Hauret and Williams (2020). A diversity index was created for each team based on each variable measured; age, gender, nationality, educational degree level and personality (introversion/extroversion), using the calculation in equation 1. Age, gender, nationality, and educational degree level were transformed to numerical values to allow for the indices to be created. All team averages were then standardised by dividing each answer by the operational maximum for each variable (dividing equation 1 by equation 2, as seen in equation 3). The standardised indices were then compiled and the mean was calculated, denoting the composite diversity index for each team.

$$\text{Equation 1: } D = 1 - \sum_{i=1}^k p_i^2$$

Equation 2: $\frac{k-1}{k}$

Equation 3: $\frac{\text{Equation 1}}{\text{Equation 2}}$

This method of standardising the diversity index meant that the operational minimum for each diversity attribute was 0, and the operational maximum was $\frac{k-1}{k}$, with k being the number of categories that exist under each diversity attribute as in equation 2.

After the standardised diversity index (using equation 3) was calculated for each diversity attribute they were added together and divided by five, the number of diversity attributes. This created the composite diversity index for each team and was compared to the average job satisfaction for each team.

Dependent Variable - Job Satisfaction

Two measures of job satisfaction were created, as seen below. The two measures of job satisfaction were then compared with one another.

Job Satisfaction Measurement One: Overall job satisfaction calculated by combining the responses for questions 1 and 12.

Job Satisfaction Measurement Two: Job satisfaction as investigated by the mediating variables as seen in Figure 2. Indices for each mediating variable were calculated using the average responses across the questions included in the questionnaire to measure each variable as in Appendix B. This measurement allowed for each mediating variable to be considered with an equal weighting as to its influence on job satisfaction.

Mediating Variables - Inclusion, Stress, Team Commitment, Social Support, Fairness, Well-being

An index for each mediating variable was created using a combination of the questions as detailed in Appendix B.

Moderating Variables - Diversity Training, Team Building, Team Working, Team Socialising

The answers for each moderating variable were converted from ranges to singular numerical values denoting the limit of each category, to allow these to be input into SPSS and compared to the other variables.

Relationships Between Variables

The data analysis was completed using SPSS v.27, allowing for investigation into all hypotheses. This included identifying bivariate correlations between the independent variable of diversity index and Measurement One of job satisfaction, Measurement Two of job satisfaction and all the mediating variables. For these correlations, any P-value signifying the confidence interval of 90% has been considered acceptable, as this is the level of confidence that the researchers are willing to accept in this study, in line with Tan and Tan's (2010) recommendation for researchers to choose their own confidence interval. Scatter plots were created to visualise the data. To interpret the values of the correlations, Cohen's effect size was

used, where 0.1 represents a small effect size, 0.3 represents a medium effect size and above 0.5, a large effect size (Cohen, 1988).

For any measurements that were made up of several items, internal consistency was tested using Cronbach's Alpha. This ensured that the questions we had posed were consistent within the variables, strengthening the validity of the measurements. In this study, 0.60 is considered an acceptable level of Cronbach's Alpha, as supported by Uraschi, Horodnic and Zait (2015). It was identified that one question (question 5, seen in Appendix B) measuring inclusion was not consistent with the other two questions as it brought the Cronbach's alpha value down to 0.331, in comparison to consistency of 0.775 when excluded. Therefore, this question was excluded from the results. Any statistically significant results were then further investigated using regression analyses, including logarithmic, inverse, quadratic, cubic, compound, power, S-curve, growth curve, exponential curve and logistic regressions.

In addition, the responses from all teams were compared to the data from teams with 100% response rate. This was due to the teams with 100% response rate having the most accurate measure of diversity. These results were used to validate the data from all 17 teams, and to check the reliability of using the threshold of response rate for each team of >50%.

The moderating variables were analysed using partial correlations, controlling for each moderating variable as detailed in the theoretical framework (Figure 2). These values were then compared to the Pearson's bivariate correlation coefficient and tested as to whether there were any significant differences. This was completed for each relationship in the framework, controlling for each moderating variable. Software created by Soper (2021) was utilised for this comparison, which gave Z-scores of comparison and their significance.

3.4.2 Interviews

After conducting and recording the interviews they were transcribed. This allowed structured analysis and detection of relevant information. Immediately following the interview, the interviewer and the interview assistant discussed the interview and key elements were noted. After transcription, seven themes were identified, which were largely similar to the key elements of the interviews that were noted right after the interviews. The analysis of the transcribed interviews allowed us to code and thus detect the key features.

3.5 Non-respondents

Out of the possible 256 teams that fall within our criteria, 200 were contacted to participate in the study, with the response rate from the 200 teams at 17.5%. Within this, ten research leaders declined to participate, leaving the sample at 23 teams. Of these teams, six teams were excluded due to reasons detailed in the methods section, with the final sample at 6.6% of the total population being studied. As for the reasons given behind declining participation, several of the team leaders explained that their team was already too busy and therefore did not have enough time to complete the questionnaire, they did not want to take part due to our research being too different from their own area of research or they simply gave no reason.

3.6 Validity, Reliability and Generalisability

Validity “indicates the extent to which observations accurately record the behaviour” that a researcher is interested to measure (Bougie & Sekaran, 2020 p.139, 2020) and is related to the integrity of the conclusions that result from a study (Bryman & Bell, 2015). An important factor of internal validity for this research project is the validity of the measurement of job satisfaction. In order to increase the validity of this measurement, we have based the mediating variables and thus questions measuring job satisfaction on a study by Findler, Wind and Mor Barak as their research statistically demonstrates that there is a correlation between the six mediating factors, and job satisfaction (Findler, Wind & Mor Barak, 2007). This correlation is tested within this study, however, taking team diversity into account instead of individual attributes of diversity. In order to ensure high validity for the causality between the independent variables and the dependent variable, questions measuring extraneous factors (moderating variables) that are believed to impact job satisfaction, based on the literature review, have been included in the survey.

Reliability “refers to the consistency of a measure of a concept” (Bryman & Bell, 2015, p.169). In terms of reliability of the responses to the questionnaires, one can be rather confident that only the intended respondents have completed the survey, as the questionnaire was only sent to teams that agreed to participate. Due to the surveys measuring diversity and job satisfaction, which can be rather sensitive subjects, it was important to ensure that all respondents were kept anonymous in an attempt to gain a higher response rate. However, as respondents were not asked to fill out their email address or similar information, we cannot be certain that one respondent did not fill out the questionnaire more than once which would affect the reliability of the results. In terms of internal reliability, Cronbach’s alpha was used in this study to ensure consistency within the questions measuring each mediating variable. This was also being applied to the consistency between the mediating variables when used to create Measurement Two of job satisfaction.

In regard to generalisability, the findings could be relevant to other R&D teams at Lund University or to other medical R&D teams outside of Lund University, for example both non-profit and private organisations. However, to fully investigate this, this study would need to be taken further and the design utilised in other, similar research settings to test the reliability of the theory and method.

3.7 Ethical Considerations

Diener and Crandall (1978, cited in Bryman & Bell, 2015) underline four main points concerning ethical considerations; harm to participants, lack of informed consent, invasion of privacy and deception. In regard to harm to participants, we ensured that all participants had been informed that they would be kept anonymous. However, it was emphasised that the reader would know that medical R&D teams at Lund University are the focus of the study. This level of anonymity was clarified in the initial introductory emails, in the questionnaire and during the

beginning of the interviews. Further, it was especially important to explain the research purpose as the questionnaire could trigger further reflection regarding the rather sensitive topics of diversity and job satisfaction, including stress, inclusion, and well-being.

In relation to informed consent, participants ought to have enough understanding about the research project in order to make an informed decision about taking part (Bryman & Bell, 2015). Therefore, necessary information about what participation would entail was described in the initial contact email, with emphasis that participation was voluntary. In regard to the interviewees, we did not contact any interviewees directly, instead, questionnaire respondents could leave their contact details or contact us should they want to take part in interviews. In addition, when asked by the teams or when there were multiple questions from the R&D teams, we presented our research project. This was done in order to ensure that all participants were informed about and were comfortable with participating in the study. Even after the potential interviewees had left their email addresses, it was made sure that they knew what an interview would entail and one interviewee declined to participate, demonstrating that the interviewees did feel that they could opt-out if desired. Furthermore, all interviewees were informed about the purpose of the research, the purpose of the interview, confidentiality as well as the purpose of recording the interviewees during the introduction of the interview. This relates to Diner and Crandall's (1978, cited in Bryman & Bell, 2015) third point regarding privacy, as we were asking questions regarding their personal background. Therefore, it was important that we made sure that all participants were informed about how the information was going to be used.

3.8 Limitations of Method

There are a few limitations to the method of investigation due to various factors, including time and budget constraints and the availability of medical R&D teams. A limitation of the sampling method is that team leaders who are more interested in diversity may be more likely to be willing for their team to take part. This could impact how diverse their team is and how much time or effort they put into discussing diversity. Some team leaders who could be concerned about job satisfaction or the diversity of their research teams may also be hesitant to pass the questionnaire on to their teams. It is likely that discussions regarding diversity and job satisfaction may be sparked by taking part in our study. This is also applicable to our method of gaining interviewees.

Another limitation to the method is that the study is not a blind study. This was decided due to the sensitivity of the information collected, and therefore the level of transparency with what we were investigating needed to be high. This also aided in the team's understanding of what we required from them and ensuring that participants felt comfortable sharing the information we asked for. Therefore, the level of information given to the various teams was standardised. Ideally, we would have sent out a longer questionnaire with many different factors, so that the participants were unaware of which correlation we were looking for, however we chose to keep the questionnaire short so that there were high chances of a large sample size. An ideal method for our survey would have been utilising the Minnesota Satisfaction Questionnaire (MSQ) to investigate job satisfaction due to its reliability. However, this was not possible in this study

due to copyright and the need for a licence to use the MSQ (University of Minnesota, n.d.), which was not within the budget for this study.

Sampling criteria was also a challenging distinction to make due to the varied structure of medical research teams. Therefore, it was decided to take a snapshot of the teams as they are during the period of April to May 2021. This allowed for the inclusion of students, whether they were part of the team for six months, twelve months or four years, giving an accurate picture of the team. The team members could also be full time or part-time, as long as they were involved in projects and work in the team environment, again to get an idea of the full team.

The grouping of respondents into age categories grouped may have affected the results. For example, diversity between ages 29 and 30 is not a large difference in reality, however, due to the categorisation, they will be noted as a large difference in diversity. However, having categories would have made the calculated Blau's Index of Heterogeneity for each team misleading as that would have accounted for diversity between participants who are no more than a year apart. Another reason behind categorising these variables is to assist with the anonymity of respondents.

The method of using video conferencing may have limited the interviews, as this reduced the ability of the interviewer being able to analyse the body language of the participant, and therefore non-verbal cues may be lost (Bougie & Sekaran, 2020), however, face-to-face interviews could not be conducted due to the pandemic at the time of interviewing.

3.9 Research Process

By constantly reviewing the literature and terms used throughout this study, it was identified that the term job satisfaction is more commonly used in research than employee satisfaction and therefore the decision was made to move forward with this term over employee satisfaction. However, this decision was made after the questionnaire had been sent to the teams and therefore it was investigated whether respondents would have answered differently had the term "job satisfaction" been used instead of "employee satisfaction". We asked all interviewees if this change in term would have made them interpret or answer the survey differently. All interview participants said this change in term made no difference to how they would have answered the survey.

4 Empirical Data

In this section, the results derived from the surveys and interviews are presented. Data was received from 23 medical R&D teams at Lund University, consisting of 119 individual responses. Due to the set criteria, the study's sample consists of answers from 17 medical R&D teams at Lund University, resulting in 6.7% of the total population being studied. These responses include a total of 101 completed questionnaires. One team was excluded from the study due to retrospective realisation that the team did not meet the criteria set out in the methods chapter. Five other teams also had to be excluded due to the response rate not meeting the lower limit of at least three respondents and above a 50% response rate. The response rate for the 17 teams included ranged from 55.6% to 100%, with a total of eight teams having a 100% response rate.

4.1 Diversity and Job Satisfaction

Table 1 reports the results of correlations between team diversity and the two measurements of job satisfaction. The only significant result identified here, is the relationship between team diversity and Measurement Two of job satisfaction, as demonstrated by the coefficient of -0.434 using Pearson's product-moment correlation, with statistical significance of 0.081. Therefore, there is 90% confidence in this negative correlation. The Cronbach's alpha coefficient of internal consistency for this analysis was 0.713, indicating an acceptable level of internal consistency within this measurement. This reliability can be supported by completing a Cronbach's alpha analysis on the individual response data concerning the mediating variables that contribute to this measure of job satisfaction as the coefficient is 0.794.

Table 1 - Statistical analysis of team diversity and two measurements of job satisfaction.

Measurement of Job Satisfaction	Pearson Product-Moment Correlation Coefficient	Pearson Product-Moment significance	Spearman Rank Order Correlation Coefficient	Spearman Rank Order Significance	Cronbach's alpha
Measurement One	-0.338	0.184	-0.308	0.229	0.437
Measurement Two	-0.434*	0.081	-0.385	0.127	0.713

*Correlation is significant at the 0.1 level (2-tailed)

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

The scatter plot from SPSS below (Figure 4) demonstrates the composite diversity index for each team on the horizontal axis and Measurement Two of job satisfaction on the vertical axis. The line of best fit has been added to assist in visualising the negative correlation.

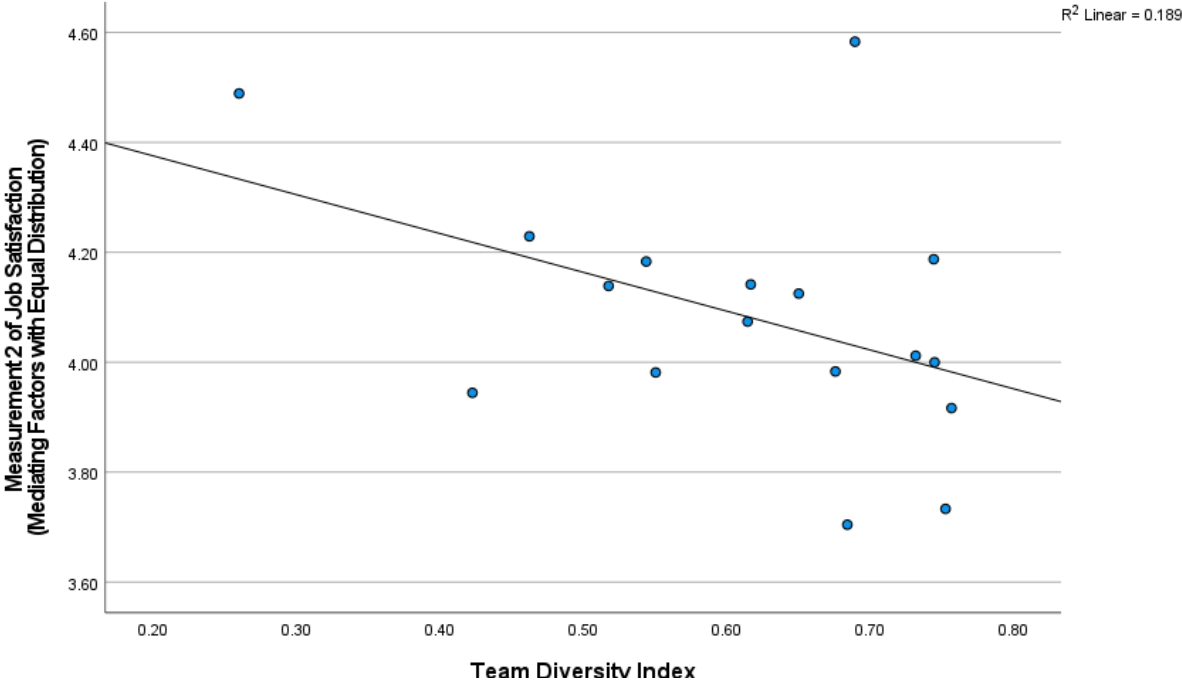


Figure 4 - Relationship between team diversity index and job satisfaction (Measurement Two). Data from 17 medical R&D teams at Lund University.

Analysing the data from the eight teams with 100% response rate returned no significant results for either measurement of job satisfaction.

4.2 Mediating Variables

All the questions measuring the mediating variables were demonstrated to have a statistically significant correlation with Measurement One and Measurement Two of job satisfaction, as seen in Appendix I. The significant results that were identified were correlations between inclusion, team commitment, social support and fairness, with job satisfaction Measurement One. Evidently, there are also correlations between all mediating variables and Measurement Two of job satisfaction due to the mediating variables being used to create this measurement. The analysis of correlations was completed to ensure that using the mediating variables to create Measurement Two of job satisfaction was reliable.

The statistical significance of the correlation coefficients for each variable contributing to job satisfaction can be seen in Table 2 below. These results have been found using both Spearman’s Rank Order Correlation and Pearson Product-Moment correlation. The Cronbach’s alpha coefficient for each variable that was measured using more than one question is noted in the

table, hypotheses three, six and seven only had one item on the questionnaire and therefore, this measurement is not applicable.

Table 2 - Statistical analysis of team diversity and mediating variables contributing to job satisfaction.

Hypothesis	Measurement of Job Satisfaction	Pearson Product-Moment Correlation Coefficient	Pearson Product-Moment significance	Spearman Rank Order Correlation Coefficient	Spearman Rank Order Significance	Cronbach's alpha
H2	Inclusion	-0.352	0.165	-0.541**	0.025	0.775
H3	Stress	-0.222	0.392	0.037	0.888	N/A
H4	Team Commitment	-0.197	0.448	-0.256	0.321	0.623
H5	Social Support	-0.203	0.435	-0.220	0.397	0.405
H6	Fairness	-0.388	0.123	-0.224	0.387	N/A
H7	Well-being	-0.353	0.164	-0.269	0.297	N/A

*Correlation is significant at the 0.1 level (2-tailed)

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

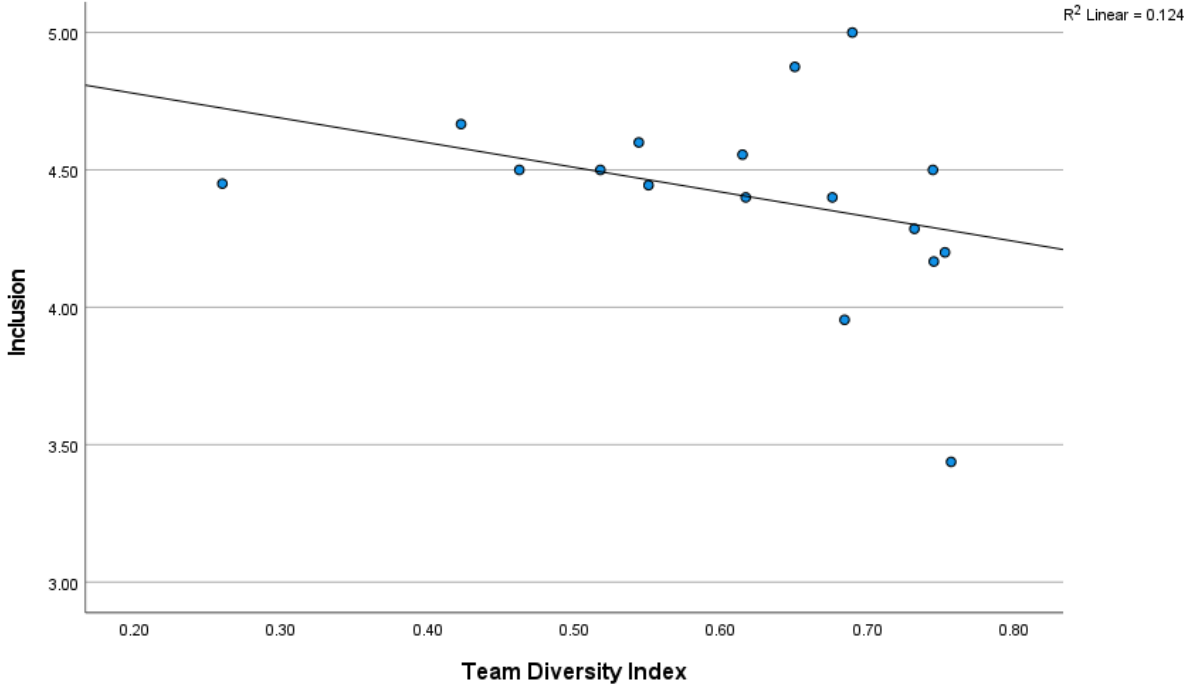


Figure 5 - Relationship between team diversity index and inclusion. Data from 17 medical R&D teams at Lund University.

Investigating the identified relationship between team diversity index and inclusion using regression analyses returned no significant results.

The data from the eight teams with 100% response rate support the findings presented in Table 2. The findings for the teams with a 100% response rate are presented in Table 3.

Table 3 - Statistical analysis of team diversity and mediating variables contributing to job satisfaction, of the eight teams with 100% response rate.

Hypothesis	Measurement of Job Satisfaction	Pearson Product-Moment Correlation Coefficient	Pearson Product-Moment significance	Spearman Rank Order Correlation Coefficient	Spearman Rank Order Significance	Cronbach's alpha
H2	Inclusion	-0.784*	0.021	-0.778*	0.023	0.818
H3	Stress	0.001	0.999	0.192	0.649	N/A
H4	Team Commitment	-0.226	0.590	-0.238	0.570	0.553
H5	Social Support	-0.433	0.284	-0.381	0.352	0.776
H6	Fairness	-0.054	0.898	0.096	0.820	N/A
H7	Well-being	-0.060	0.889	0.096	0.821	N/A

*Correlation is significant at the 0.1 level (2-tailed)

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

As detailed in Table 3 above, a significant correlation of -0.778 is found between diversity and inclusion when measured using Spearman Rank Order Correlation and a significant correlation of -0.784 using Pearson Correlation Coefficient. These findings are similar to the results found for all 17 teams. The visualisation of this correlation is illustrated in Figure 6.

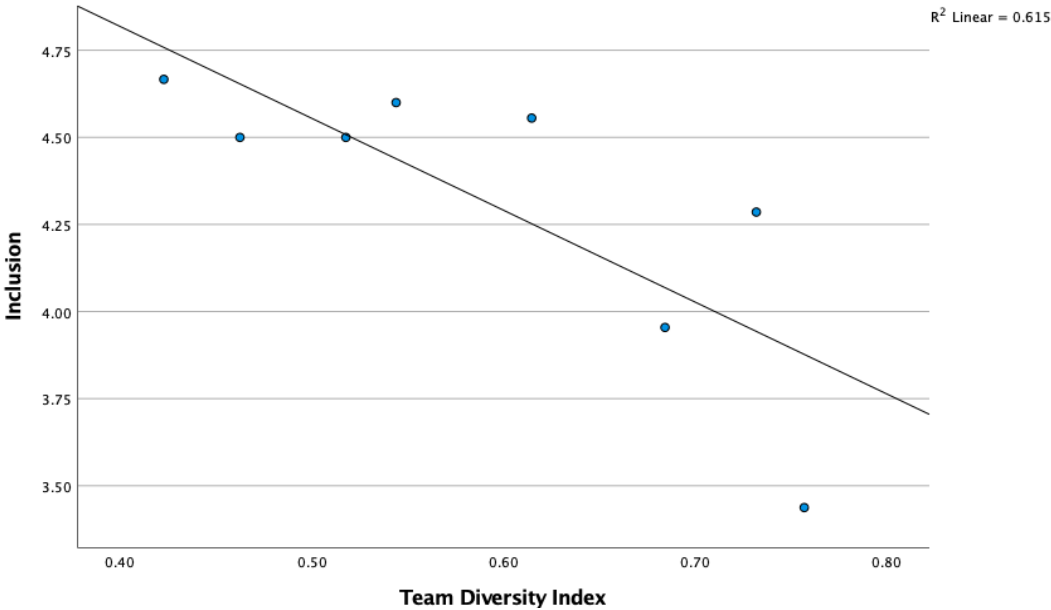


Figure 6 - Relationship between team diversity index and inclusion. Data from the 8 R&D teams with 100% response rate.

4.3 Moderating Variables

For hypotheses eight, nine, ten and eleven, the moderating variables do not significantly change the correlation coefficients of the relationship between team diversity and overall job satisfaction, whether measured via Measurement One or Measurement Two of job satisfaction. This was identified by no significant Z-scores resulting from partial correlations. This is reflected in the impact of moderating variables, which also have no significant differences in the correlations coefficients when analysed.

4.4 Findings from the Interviews

The supplementary data collected via the interviews is presented in this section. The interviews were first transcribed and then analysed. As a result of this process six main themes were identified.

Diversity's effect on communication

The topic of communication was discussed by interviewee C, E and F. The main opinions included the increased difficulty of communication or the possibility of miscommunication due to greater diversity resulting in a larger number of varying opinions and perspectives within the team. It was mentioned that increased diversity, in terms of cultural and educational diversity, may make communication “a little bit difficult because you need to understand each other's different styles of communication” (Interviewee E, May, 2021). This specific example was in response to a question asking about the benefits of team diversity instead of the question about challenges that increased diversity might cause. Diversity is discussed as potentially causing greater need to “navigate disagreement” (Interviewee F, May, 2021). Additionally, it was stated that diversity implies a diverse set of communication styles, Interviewee C stated that “what would be a perfectly clear and like a very solid piece of information, let's say on a Swedish-to-Swedish level, it would only throw me in despair and agony” (interview, May 2021).

In relation to communication, one interviewee mentioned that greater diversity of mother tongues in the research team would be beneficial. This opinion was reasoned due to English being the research language, meaning that all members would then need to speak English throughout the whole research process (Interviewee B, May 2021).

Diversity's effect on output and problem solving

When asked about the benefits of diversity, none of the interviewees mentioned any of the mediating factors that we had identified to contribute toward job satisfaction except for one. Interviewee F stated that increased gender diversity would mean having more women in the group who they believed would contribute to improved social interactions within the team, stating that: “we would have less interpersonal conflicts, there will be more overall, more interpersonal skills” (Interviewee A, May 2021).

However, when asked about the benefits of diversity, several interviewees brought up the effects in terms of the outcome that they believe the diversity within the group contributes to. One way that interviewees stated diversity to be beneficial for the team's outcome was that the diversity in the team contributed to improved problem-solving. For instance, Interviewee F stated that “well, for sure, you can see how different cultures approach the same problem. And this is very nice. And I think it's, you know, it shows you different kinds of approaches and how to reach the same or different solution. So, I think it could be, it's definitely worth to go for this” (Interviewee A, April 2021). In addition, Interviewee B also believes the diversity within the group to be beneficial for the team. However, this interviewee highlighted the diversity of academic background rather than cultural background, stating that the diverse knowledge means that they can have some staff working on the clinical side and some performing wet lab work. However, Interviewee B highlighted that there may be some lack of understanding between the two different sides because they are not closely acquainted due to limited interaction (Interviewee B, May 2021).

Ambiguous structure of the R&D teams

One of the teams was discussed to consist of both preclinical and clinical researchers (Interviewee B, May 2021), and due to this, the team does not spend much time together and therefore, the interviewee believed the team found it hard to know who holds which responsibilities. Similarly, when Interviewee E was asked how many people were in their team, they were unsure of the exact number of who could be classed as their team in a similar team of a mix of preclinical and clinical research. Interviewee F was also a little unsure of the makeup of their team, however mentioned that it is a new team, split over two locations, so this may have an impact (interview, May, 2021).

Interviewee G stated that their team is purely lab-based, however, the team leader spends around 20% of their time teaching to be able to run the research group yet does not partake in any of the practical research themselves. This is in comparison to Interviewee D, who noted that the group leader also runs experiments (interviews, April-May, 2021).

Focus on surface level diversity over other types of diversity

Surface level diversity was more prominently mentioned than deep-level diversity by most interviewees, as the main types of diversity mentioned were nationality, gender and age (interviews, April-May, 2021). For instance, one interviewee mentioned the diversity within the faculty that was known by the interviewee as they had seen pictures of new staff in the newsletter (Interviewee C, May, 2021), alluding to the focus on surface-level diversity. The most common type of deep-level diversity discussed was educational diversity. However, one interviewee did mention personality but in the context that most of their team were very similar in this aspect (Interviewee G, May, 2021). In addition, diversity of religion and political views were briefly mentioned by Interviewee G (interview, May, 2021).

Diversity Training and Team Building

All participants described that they had had little to no formal team building and no diversity training within their teams. Two interviewees mentioned that the reason for this may be that there is no room in their budget for this, so any money that had been put towards this would

have come from the team leader (Interviewee A, D, April, 2021). In regard to diversity training, no interviewees had participated in any diversity training with their teams. However, one of the interviewees had completed diversity training at a session run by the faculty specifically for team leaders. The interviewee did however mention that the focus was purely on gender diversity and the effects of this on the team's output, for example, creativity and productivity (Interviewee D, April, 2021).

All participants said that they would be open to completing diversity training and all except one (Interviewee G, May, 2021) said that they thought it would be beneficial for them to have this experience. Although most interviewees were positive toward taking part in diversity training, there were hesitations regarding the amount of time needed for this. The reasoning behind this was due to busy schedules, there would likely be issues finding the time (Interviewee A, B, April-May, 2021). The reasoning for not thinking diversity training is necessary was, "I don't think we need it because we have always been diverse" (Interviewee G, May, 2021).

In terms of time spent with the team outside of working hours but doing activities that may not strictly be considered team building, there seem to be three different levels of interaction. The first being that the team spends a significant amount of time together outside the lab (Interviewee, A, D, April, 2021). The second being that the team spent lots of time outside of working hours before the pandemic but have since then not been able to (Interviewee C, F, May, 2021). The final level of interaction was that the team spends little time outside of working hours irrespective of the pandemic (Interviewee E, B, G, May, 2021). For example, Interviewee C mentioned that they used to spend time together in the lab during working hours and then go to a café or restaurant together after work, before the pandemic (Interviewee C, May, 2021).

Three interviewees also mentioned that the team goes on a trip every year. Both interviewees underlined that most time is spent "casually" but that during the weekend there were specific team building exercises or activities that had been arranged in advance (Interviewee D, C, F, April-May, 2021). However, Interviewee C emphasised that science is what brings the team together (Interviewee C, May, 2021). In some instances, this was a specific retreat for the team, however in Interviewee F's case, this was a wider, faculty organised trip with some activities that were related to bonding, yet apart from this there were no other activities. Team building was discussed by Interviewee E as only occurring once a year over a Christmas meeting, and aside from this, there were no other activities that the team would complete together (interview, May, 2021).

Protocol for more severe diversity related issues.

When asked about the course of action should a more serious diversity-related issue occur, several interviewees mentioned that there are rules and guidelines, including procedures, that are introduced to all new team members (Interviewee C, D, April-May, 2021). Interviewee B also alluded to an existing protocol but did not confirm that all team members have read this (Interviewee B, May, 2021). In addition, it was brought up that all PhD students receive mandatory information at the beginning of their employment concerning such matters (Interviewee D, C, April-May, 2021). As for Interviewee F, they mentioned that any problems would be brought to the head of department but did not clarify whether this was a formal guideline or the action the interviewee would personally take (Interview F, May 2021).

5 Analysis and Discussion

5.1 Diversity and Job Satisfaction

The second measure of job satisfaction, measured through the mediating variables, displayed a moderate negative correlation of, -0.434 with team diversity. However, as the significance value was 0.081, it is suggested that there is a 90% level of confidence that this negative effect on job satisfaction is due to diversity. It is likely that a higher level of confidence could be achieved if more data was available, if the 17 teams included are an accurate, fair representation of the medical R&D team at Lund University at large. With that said, according to Yale (n.d) a 95% level of confidence is the most commonly used; however, a 90% level of confidence is considered an acceptable level for a study, this is also confirmed by Tan and Tan (2010). Therefore, we accept this level of confidence but suggest that further research could include a larger sample size which would hopefully help obtain a higher level of significance.

Furthermore, Cronbach's alpha suggests that the mediating variables used to measure job satisfaction are consistent and that the reliability of measurement is acceptable due to the value being above 0.60, as supported by Ursachi, Horondic and Zait (2013). Moreover, in relation to reliability of measurements, a similar negative correlation coefficient can be found for both relationships between team diversity and job satisfaction Measurement One and job satisfaction Measurement Two. However, the relationship between diversity and job satisfaction Measurement One cannot be concluded to be significant. The existence of the similar correlations arguably demonstrates that the two measurements of job satisfaction are consistent. Therefore, the theoretical framework may be correct in regard to some mediating variables between team diversity and job satisfaction. However, it must be acknowledged that due to the slight difference, and absence of significant correlation between team diversity and Measurement One of job satisfaction, there may be other factors than the identified mediating variables in this study that influence overall job satisfaction.

The findings in this thesis support the conclusions of Schippers et al. (2003) who state that diversity has a negative effect on satisfaction, however they also found that there is a negative impact on commitment, which was not identified for the medical R&D teams surveyed within this thesis. The negative relationship between diversity and job satisfaction, conflicts with Campbell (2011) as no relationship was found between diversity of gender, race and ethnicity, that were individually accounted for, and job satisfaction. These contrasting results could be due Campbell's (2011) focus on only managers and supervisors, whereas this thesis analyses all team members. The reasoning behind this difference in results may be due to the diversity within the composition of the team having a larger impact on job satisfaction than the individual leading the team being classed as "diverse" in relation to other team leaders within an organisation.

Although Williams and O'Reilly (2003) analysed studies that have investigated one diversity attribute at a time, namely gender and age the findings from such studies are in line with this study's results demonstrating a negative correlation between diversity and job satisfaction. In other words, increased diversity of gender and age decreased levels of job satisfaction (Williams & O'Reilly, 2003). Further, Hauret and Williams (2020) found that, based on the 17 488 respondents in their study, that diversity in terms of nationality at the respondents' firm has a negative impact on job satisfaction.

However, Hauret and Williams (2020) confirm their hypothesis that the relationship between diversity and job satisfaction is dependent on whether or not an employee belongs to the majority nationality at their firm. This could be valuable to investigate by dividing the responses by the categories to measure diversity attributes to discover the majority for each attribute and see if the employees who are part of the majority experience a higher level of job satisfaction. The reliability of the true effect of diversity on job satisfaction could be determined by whether or not the employee is part of the majority for a given attribute. Based on this notion, the high levels of job satisfaction could be due to no team member included in the study being part of a minority of any form of diversity. In addition, Hauret and Williams findings may suggest that employing, for example women on a quota basis, for example ensuring that there is at least one woman on a board within an organization's management team may be detrimental to job satisfaction for that female manager.

The findings in this thesis demonstrate that when a team has a higher diversity index, they experience slightly lower job satisfaction. This could for instance be due to conflicting opinions, communication issues or other challenges that may arise due to diversity. The challenge of an increased number of opinions and different communications styles was also highlighted by several interviewees (Interviewee, C, F, D). With this being said, all teams included in the study report a rather high level of job satisfaction. This is the case for both measurements of job satisfaction; overall job satisfaction (Measurement One) and the combination of the mediating variables (Measurement Two). As seen in Figure 4, none of the teams have an average job satisfaction level lower than 3.7 out of 5 which can be considered rather high. This could be due to the method of contact used in this study being through the team leader, and therefore if the team leader held any concerns about their team's satisfaction, they may not have responded or rejected participation. Therefore, only team leaders who consider their teams mostly satisfied, and are confident that their team would not then question their level of satisfaction, may have those who respond to the initial inquiry about participating in the study. This may explain the high levels of satisfaction within the sample. Furthermore, this may mean that the results concerning job satisfaction may not be representative for all medical R&D teams at Lund University.

When asked about the benefits of diversity all interviewees focused on the output for the team, in terms of innovation and problem solving (Interviews, April-May, 2021). One interviewee also mentioned that greater gender diversity would be beneficial for the social environment in the team, with the reasoning that women are good at solving social issues (Interviewee F, May, 2021).

The decisions regarding the types of diversity measured through the questionnaire were supported by the results from the interviews as the most common factors of age, gender and cultural diversity were covered. Educational background was also discussed without prompt,

as was personality type in terms of introversion and extroversion. However, one interviewee mentioned political and religious diversity, yet these were not taken into account within this study due to the potential sensitivity of this information. For future studies, these factors could be considered to be measured, as these attributes had clearly been a topic of discussion within Interviewee G's team. However, although these diversity attributes were mentioned without prompting, these diversity attributes were highlighted in the survey that the interviewees had filled out before the interviews.

Furthermore, the two measurements of job satisfaction did not have an acceptable Cronbach's alpha, this suggests that the likelihood to recommend a team may not be a valid measurement of job satisfaction. This is contradicting the previous literature that utilises NPS as an indication of satisfaction or that it is not applicable in terms of job satisfaction. The reason for Measurement One of job satisfaction demonstrating a low Cronbach's alpha (0.437) may be due to NPS and the likelihood of recommending a specific team requiring very strong levels of job satisfaction.

Moreover, this study supports the findings by Findler, Wind and Mor Barak (2007) that the mediating variables of inclusion, team commitment, social support and fairness contribute to job satisfaction. This is due to these variables displaying a significant correlation with Measurement One of job satisfaction, as seen in Appendix I. This indicates that these factors are valid measures of job satisfaction, supporting the validity of this study. However, the mediating variables of stress and well-being did not result in significant correlations with Measurement One of job satisfaction, contrasting with Findler, Wind and Mor Barak's (2007) model.

Although both part and full-time employees were included in the survey, only full-time employees were interviewed. This may have affected the results from the interviews and what the interviewees considered to be challenges and benefits of diversity within the team.

5.2 Mediating Variables

The only mediating variable demonstrating a negative correlation with team diversity index was inclusion, suggesting that greater diversity influences job satisfaction by reducing inclusion levels. This correlation is using Spearman's Rank Order Correlation. The findings of this thesis demonstrate that alongside the influence that diversity of individuals has on inclusion, identified by both Findler, Wind and Mor Barak (2007) and Acquavita et al. (2009), this relationship also exists when looking at diversity of a team as a whole, regardless of specific individual diversity attributes. Question 2, concerning decision making, has the highest statistical significance according to the Pearson correlation coefficient of -0.504 with a significance level of 0.039. This suggests that this is the most influential variable of inclusion, as the other question that investigates how welcome differing opinions are, did not return a significant correlation. This supports the identification of increased diversity causing issues with decision making as identified by Zouaghi, Garcia-Marco and Martinez (2020), with this result found specifically in R&D teams. Williams and O'Reilly (2003) discuss the effect of managing high levels of diversity and the influence that poor diversity management can cause increased diversity to have a negative effect on decision making. This may be applicable to the teams surveyed within

this thesis due to the low levels of diversity training and management that became evident by both results from the survey and supported by the interviews. Therefore, both lack of diversity management and low-quality diversity management could contribute to the negative relationship between diversity and inclusion, mediated through decision making. However, the relationship between diversity and decision making should be investigated further, as it is a seemingly important factor influencing inclusion in medical R&D teams at Lund University.

No relationship was identified between team diversity and stress based on the data from the questionnaires. This may suggest that there are other more dominant factors that influence stress in the workplace or that team diversity simply does not have a significant contribution to stress among those teams included in the study. Furthermore, no interviewees mentioned stress. However, the citations that the interviewees stated to occur due to diversity may in turn be linked to stress. For instance, conflicts that occurred due to miscommunication may imply that many solutions that arise may be time-consuming, causing increased levels of stress. Therefore, it could be argued that the results from the interviews demonstrate a relationship between diversity and stress, albeit indirect. However, further investigation would be beneficial to truly determine this relationship.

The remaining four mediating variables of team commitment, social support, well-being and fairness all had a similar negative correlation between 0.2 and 0.3. The significance level for the variables does not allow for these results to be drawn as significant, however, it could be suggested that team diversity may have a weak negative influence on these factors. Moreover, the similarity of the results suggest that the influence of diversity should be investigated further, with a larger sample size and additional questions regarding each mediating variable to draw more reliable conclusions.

Alongside the mediating variables that were not included in the theoretical framework or the quantitative data analysis, some other important factors were identified using the interviews conducted. These should then be investigated further using a quantitative method similar to the one utilised in this study. One of these factors was communication, as mentioned by almost all of the interviewees. Interviewee B discussed communication from the perspective of a desire for discussion in a language that they feel comfortable in, as this was not currently present in their largely homogeneous team, with the interviewee as the exception to the homogeneity (interview, May, 2021). The influence of increased diversity within a team on communication was discussed as a potential challenge, with the example of “what would be a perfectly clear and like a very solid piece of information, let's say on a Swedish to Swedish level, it would only throw me in despair and agony” (Interviewee C, May 2021). Therefore, it could be argued that difficulty in communication, and in turn, being thrown into “despair and agony” could lead to decreased job satisfaction, however, this specific relationship should be further investigated in order to confidently determine such a relationship.

Some of the measurements of Cronbach's alpha were not above the threshold of 0.60, as outlined in chapter three. For example, the measurement of social support displayed a Cronbach's alpha of 0.405. However, when investigating the data from the teams with 100% response rate, the value for social support was above the threshold. This was the opposite for team commitment, as the value was above the threshold when looking at the data from all the teams, yet below when investigating teams with a 100% response rate. As there were only two questions measuring each of the variables of social support and team commitment, it would not be objective to exclude one of the questions based on our subjective judgement as to which question measures each variable more accurately. Therefore, we chose to include both questions for each variable, which may affect the results for these measurements, but also for

Measurement Two of job satisfaction due to their contribution to this construct. Were this study to be repeated, the questions measuring team commitment and social support could be revised, alongside including a greater number of items measuring each variable to allow for a more in-depth analysis of Cronbach's alpha, allowing exclusion of questions that do not align with the others.

5.3 Moderating Variables

As seen by the survey results, no teams had taken part in more than one hour of diversity training per month. The rarity of diversity training was reinforced by information gained through the interviews, as only one interviewee had attended any training (interviews, April-May, 2021). This lack of diversity training or management could explain the negative relationship identified between diversity and inclusion. Although no significant changes in correlation coefficients were found through partial correlations when controlling for any of the moderating variables, the lack of diversity training could influence the negative relationship identified between diversity and inclusion. This would be supported by the identification of perceptions of justice and inclusion being promoted through diversity management by Yang and Konrad (2011). To fully investigate the effect of this potential moderating variable, the sample size must be larger and include teams that do take part in regular diversity training.

When asked about diversity training, all interviewees except one responded that they had not received any diversity training (interviews, April-May, 2021). The high level of job satisfaction among all teams included in the data and low level of diversity training suggests that even though Syed and Tariq (2017) state that diversity training is important, it may not be crucial to high levels of job satisfaction. Instead, our results demonstrate that the melting pot approach to embracing diversity still results in high levels of job satisfaction. The one interviewee who had received diversity training had done so on one occasion and did not believe the diversity training to have impacted their work as it only covered "cliche things about gender diversity" (Interviewee D, May 2021). As discussed in Syed and Tariq (2017), poorly designed training programmes may even be counter-productive, which could partly contribute to the negative correlation between diversity and job satisfaction. Furthermore, one could argue that if a team member attends diversity training that they do not find beneficial, the team member may be less likely to attend further diversity training. This could be a determinant of whether the team fully benefits from the level of diversity present within the team.

When the interviewees were asked whether they would be interested in receiving diversity training, all but one interviewee responded that they would like to take part in diversity training. The interviewee not interested in diversity training stated that they did not think that it was necessary, as there had been no previous problems in the already diverse team (Interviewee G, May 2021). As all teams, including the team that Interviewee G was part of, reported an average level of job satisfaction above 3.7. Therefore, the argument of only needing diversity training if a problem occurs may be valid. Admittedly, as mentioned in the limitation of the method, the interviewees included in the study may be more interested in diversity which is why they are taking part in the study and may also be the reason behind a high interest in diversity training among the interviewees.

Two interviewees believed that diversity training would be beneficial, arguing that it could lead to better communication and understanding between team members (Interviewees B & C, May 2021). Interviewee B also stated that they thought it would be beneficial if someone new were to join the group, as they are currently very homogeneous and it could cause friction should someone with a “different background” join the group (Interviewee B, May 2021). In relation to this, Hauret and Williams’ (2020) findings suggest that when one diversity attribute, in their case nationality, is predominant, new colleagues with differing nationalities decreased job satisfaction, supporting Interviewee B’s concern.

In relation to team building and job satisfaction specifically, Amos, Hu and Herrick (2005) found team building had a positive effect on communication and job satisfaction. Interviewee B stated that they personally believe that diversity training would be beneficial to the team as it could improve the interactions between team members and create better team spirit within the team. Although Interviewee B believed that there would be an interest in the rest of the team to take part in team building, they expressed a concern that perhaps people would not have time to participate. This concern was echoed by Interviewee A and Interviewee D, who also suggested that their teams would be interested but that diversity training may be hard to fit into everyone's tight schedules (interviews, April, 2021).

The interviews also uncovered the ambiguous and varied structures and compositions of the different medical R&D teams. The structures of these teams may have affected employee satisfaction, for example, the different sizes of the teams or the ambiguity of the structure. This could also be more relevant during the current pandemic due to many of the teams working from various locations, reducing the amount of time spent together in all aspects. This was revealed by the interviews as teams who used to spend time together outside of work hours are now spending less time together. This contrast in the level of interaction within the team may affect job satisfaction.

5.4 Post Hoc Analyses

5.4.1 Post Hoc Analysis of Individual Responses

To confirm the main findings and to ensure that the chosen method of analysing average responses of the teams did not distort the data, a post hoc analysis of the 101 individual responses was completed. Due to the purpose of the study being to investigate team diversity, the diversity index of the team was still utilised to allow comparison between this value and the individual’s responses for job satisfaction. This analysis supported the findings above due to the identification of significant negative correlations between diversity index and Measurement Two of job satisfaction, and diversity index and the mediating variable of inclusion. The relationship between team diversity and Measurement Two of job satisfaction can be seen in Figure 7.

As seen in Table 4, both of the correlation coefficients were of higher significance when analysed as individual responses compared to when analysed by team average. This may be due

to the higher level of observations when looking at the data in this way. However, the correlation coefficients demonstrated a weaker correlation than found in the main analysis, suggesting that the impact of team diversity on inclusion and job satisfaction may not be as strong as previously thought. To further specify the strength of the relationship, a greater number of teams is needed.

Table 4 - Statistical analysis of team diversity and Measurement Two of job satisfaction and the mediating variable of inclusion, through individual response data, supporting the findings of the main study.

Correlation with diversity index identified	Pearson Product-Moment Correlation Coefficient	Pearson Product-Moment significance	Spearman Rank Order Correlation Coefficient	Spearman Rank Order Significance	Cronbach's alpha
Measurement Two of Job Satisfaction	-0.209**	0.036	-0.283***	0.004	0.812
Inclusion	-0.286***	0.004	-0.156	0.120	0.759

*Correlation is significant at the 0.1 level (2-tailed)

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

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

Question five, that was intended to be a third measure of inclusion, was also excluded due to returning a low level of reliability, measured through Cronbach's alpha, which is consistent with the reliability measurements of the main findings.

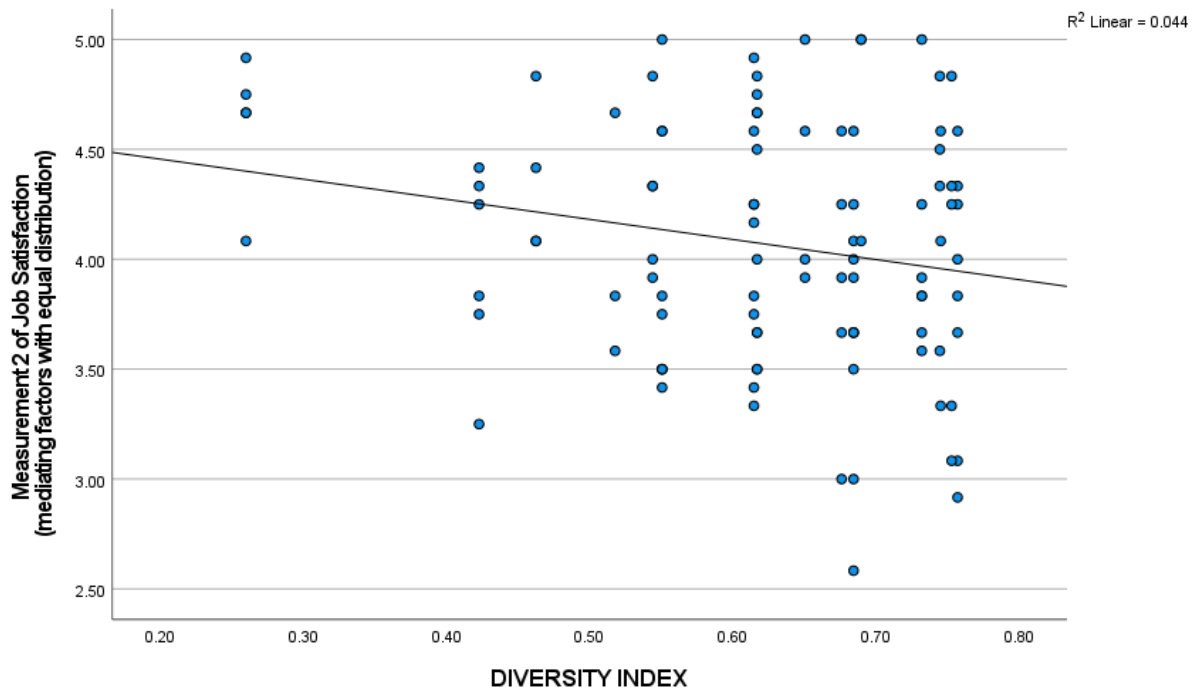


Figure 7 - Relationship between team diversity index and Measurement Two of job satisfaction. Data from the 101 individual responses.

In addition, there were also a number of correlations identified through the individual response analysis that were not significant when the average response for each team was utilised. These suggest that measurement one of job satisfaction and fairness are both also influenced by team diversity, as seen in Table 5. These are both relatively weak correlations but suggest that team diversity does have an influence on job satisfaction and fairness. The scatterplots for these relationships have not been displayed, and any insignificant correlations identified through this post hoc analysis have not been reported.

Table 5 - Statistical analysis of team diversity and Measurement One of job satisfaction and the mediating variable of fairness, through individual response data

	Pearson Product-Moment Correlation Coefficient	Pearson Product-Moment significance	Spearman Rank Order Correlation Coefficient	Spearman Rank Order Significance	Cronbach's alpha
Measurement One of job satisfaction	-0.191*	0.055	-0.172*	0.086	0.366
Fairness	-0.166*	0.096	-0.186*	0.064	N/A

*Correlation is significant at the 0.1 level (2-tailed)

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

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

The low value of Cronbach’s alpha for Measurement One of job satisfaction within this data, further demonstrates that question one in the questionnaire asking whether the respondent is satisfied with their job does not align with whether they would recommend their team. This supports the above remark that recommendation of a team may not be a good measure of job satisfaction, due to the strength of being comfortable to recommend something being greater than just feeling satisfied.

5.4.2 Post Hoc Analysis of Diversity Attributes

Due to the purpose of this study being to investigate the relationship between team diversity and job satisfaction, a post hoc analysis was completed to take into account the specific diversity attributes and the impact on job satisfaction. This was conducted using the diversity indices for each attribute compared to the team average of job satisfaction. The most significant contribution to the dependent variable, both independently of the mediating variables and through the combination of all mediating variables, was diversity in terms of age. Correlations were present between age diversity and measurement one of job satisfaction, measurement two of job satisfaction, the mediating variable of well-being and the mediating variable of fairness, as seen in Table 6. Age diversity seemed to have the largest impact on well-being, as seen by the negative correlation coefficients that can both be rounded to 0.6, alongside the high level of significance. This relationship has been visualised in Figure 8A. This result supports Williams and O’Reilly (2003), who concluded that age diversity does influence job satisfaction, however, this thesis further specifies this relationship by suggesting that this influence may be conducted through the effect of team diversity on fairness and well-being.

Table 6 - Identified Correlations between age diversity and job satisfaction, including overall job satisfaction and the mediating variables.

Measurement	Pearson Product-Moment Correlation Coefficient	Pearson Product-Moment significance	Spearman Rank Order Correlation Coefficient	Spearman Rank Order Significance
Measurement One of job satisfaction	-0.475*	0.054	-0.520**	0.032
Measurement Two of job satisfaction	-0.425*	0.089	-0.315	0.218
Fairness	-0.466*	0.060	-0.404	0.108
Well-being	-0.619***	0.008	-0.615***	0.009

*Correlation is significant at the 0.1 level (2-tailed)
 ** Correlation is significant at the 0.05 level (2-tailed)
 *** Correlation is significant at the 0.01 level (2-tailed)

The second most influential attribute of diversity was education. The greater the diversity of education, the reduced sense of fairness, team commitment and well-being, seen in Table 7, and visualised in Figure 7B. In part, this confirms the conclusion by Schippers et al. (2003) that educational diversity does not impact job satisfaction. However, if the results of this study are viewed in conjunction with the results from Findler, Wind and Mor Barak (2007) demonstrating that these variables mediate the relationship between diversity and job satisfaction, it could be concluded that educational diversity may impact job satisfaction. This is due to the negative correlations found between educational diversity and the three mediating variables identified to contribute to job satisfaction.

Table 7 - Identified Correlations between educational diversity and job satisfaction, including overall job satisfaction and the mediating variables.

Measurement	Pearson Product-Moment Correlation Coefficient	Pearson Product-Moment significance	Spearman Rank Order Correlation Coefficient	Spearman Rank Order Significance
Team Commitment	-0.252	0.329	-0.418*	0.095
Fairness	-0.416*	0.097	-0.381	0.132
Wellbeing	-0.452*	0.068	-0.439*	0.085

*Correlation is significant at the 0.1 level (2-tailed)

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

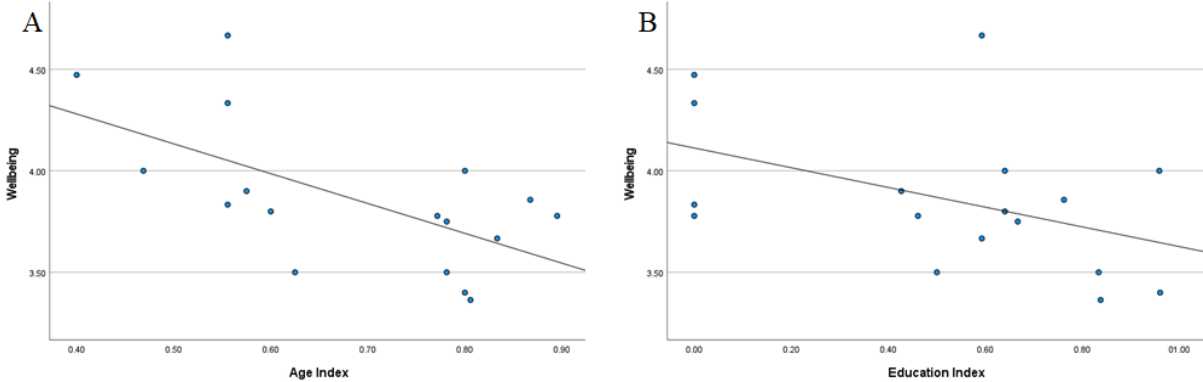


Figure 8 - Relationship between diversity attributes and well-being. A) Age index and well-being. B) Education index and well-being. Data from 17 medical R&D teams at Lund University.

6 Conclusion

6.1 Main Findings

In relation to the research question; *what is the effect of diversity on job satisfaction among medical R&D teams at Lund University?*, the main conclusion of this study is that diversity has a moderately negative effect on job satisfaction among medical R&D teams at Lund University. A negative correlation of -0.434 was identified for this relationship and can be accepted with a level of confidence of 90%. Therefore, hypothesis one; *Composite team diversity has an effect on job satisfaction within medical R&D teams at Lund University*, has been accepted with the same level of confidence. More specifically; diversity has a moderately negative effect on job satisfaction. This result can be seen in Figure 9, with the relationship shown by the red dashed arrow labelled H1.

Another important conclusion of this study is that the negative relationship between team diversity and job satisfaction was found to be likely mediated through a lacking feeling of inclusion, as greater diversity was shown to reduce perceptions of inclusion. This allows us to accept hypothesis two; *Composite team diversity has an effect on an employee's feeling of inclusion within medical R&D teams at Lund University*, due to the identification of a moderate negative correlation, with a level of confidence of 95%. However, concerning hypotheses three to seven, no results were found to be significant. Therefore we reject the hypotheses that team diversity has an effect on stress, team commitment, social support, fairness and wellbeing.

The final conclusion is that the moderating variables, as detailed in Figure 9, do not impact the relationship between diversity and job satisfaction. The reasoning behind this is no partial correlations were identified when accounting for the moderating variables on this relationship. Therefore we reject hypotheses eight to eleven. The conclusions concerning the research question and hypotheses are demonstrated in Figure 9.

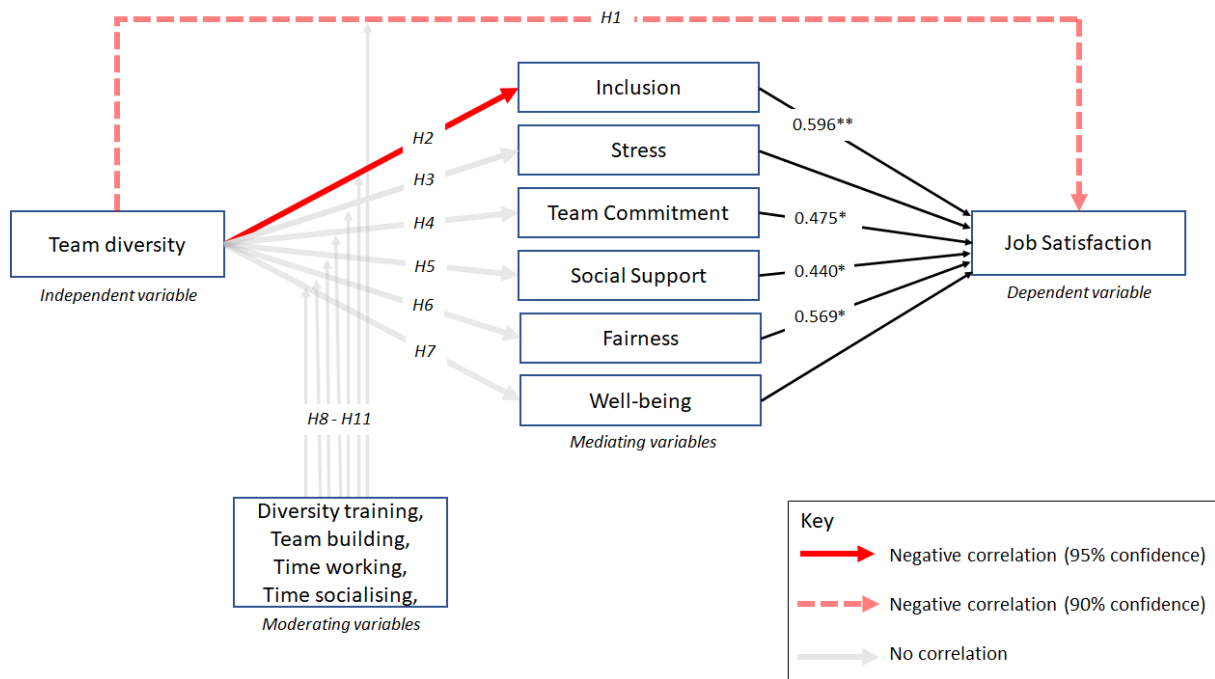


Figure 9 - Schematic diagram of the identified correlations between team diversity and job satisfaction. Significant Pearson correlation coefficients between the mediating variables and Measurement One of job satisfaction have been included.

*Correlation is significant at the 0.1 level (2-tailed).

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

6.2 Implications of the Findings

As a result of increased globalisation, organisations and their management teams are likely to find themselves with a more diverse workforce. The findings of this study demonstrate a negative correlation between diversity and job satisfaction. The implication of this finding is that it is important for managers that find themselves with an increasingly diverse workforce to reflect upon the influences of this negative correlation. Further investigation into combatting a negative effect of diversity on job satisfaction can ensure that the diverse workforce is satisfied and inclined to stay, securing a more stable workforce with a broad set of skills that derive from increased diversity. In other words, this would enable managers to fully reap the benefits of diversity.

In addition, we hope that by contacting these R&D teams, we will have sparked some conversations within the teams about their diversity, whether the teams ended up taking part in our research or not. According to Gassmann (2001), such discussion would be beneficial not only for job satisfaction but also for equality and inclusion, creativity and innovation.

6.3 Limitations and Suggestions for Future Research

Considering the time constraints for this thesis there are a few limitations that should be considered when interpreting the results. For instance, we were not able to investigate diversity among different types of teams, in different organisations and in different geographical locations. Therefore, collecting data from one organisation only limits the external validity and generalisability of this thesis. Future research could utilise the data collection method to investigate a larger number of teams and could also look beyond medical R&D teams at Lund University in order to draw more generalisable conclusions. A larger sample size with a higher response rate would allow firmer conclusions to be drawn.

Furthermore, in order to ensure a higher response rate, we kept to the recommendation of not including many more than 25 questions in questionnaires. More substantial research could utilise broader and more in-depth measurements of job satisfaction in order to be able to draw more reliable results and conclusions. For instance, job satisfaction could be measured using the MSQ.

As with social science research, the study has not been conducted in a controllable environment meaning that extraneous factors such as an individual's mood when answering the survey may have affected the results. Future research with more time and a larger budget could, to some extent, counteract these factors by allowing for a longitudinal study, repeating data collection over a period of time. However, such results would still be affected by extraneous factors. This further research should be undertaken due to the importance of both diversity and job satisfaction within the field of management, alongside the valuable contribution of medical R&D teams to global health. Furthermore, to reduce the extraneous influences on this relationship, further investigation could look into how this affects teams with only full-time workers. This would allow a reduction of the influence of time spent with the team in a professional setting as it would be more equal for all teams.

Due to very few respondents having taken part in any diversity training, the potentially positive effect of this moderating variable on the relationship between team diversity and job satisfaction could not be investigated. Therefore, this study would need to be replicated with a variety of teams, some of whom have completed diversity training and some who have not, to fully be able to conclude as to whether diversity training has a role in this relationship. Such research study could also investigate the forms of diversity training that are the most valuable in helping managers reap the benefits of the increasingly diverse workforce, and as demonstrated by the interviews, there is a high interest in taking part in diversity training.

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Appendix A - Questionnaire

Section 1: Employee Satisfaction

(rated on a Likert scale of 1-5, strongly disagree – agree)

1. Overall, I am satisfied with my job
2. Within my role I feel welcome to participate in decision making within the team
3. I am satisfied with the level of stress I experience at work
4. I am satisfied with my ability to concentrate on work tasks
5. I am satisfied with the social interactions at work
6. I am satisfied with the development opportunities available and offered to me
7. I feel supported by my team
8. I am not currently looking for other employment opportunities
9. My team members welcome opinions different from their own
10. My team is good at resolving internal conflicts and disagreements
11. I would be satisfied to spend the next 4 years working in this team
12. I would recommend this team as a good team to work within

Section 2 – Time with the Team

13. How much time do you spend with your team in a professional setting?
14. How much time do you spend with your team outside of working hours? (eg during breaks, after-works or team organised social events)
15. How much time do you spend on team building activities? (time spent with team during working hours doing other activities other than job task)

Section 3 – Perceptions about Diversity

16. How much time do you spend on diversity training, or discussing diversity within the team?

17. How diverse do you believe your team to be? (For instance considering age, gender, education, personality and nationality)

18. How beneficial do you find the diversity of your team to be? How often do you find that diversity creates challenges within your team?

Section 4 – Diversity

19. Do you consider yourself to be more of an introvert or an extrovert in the workplace?

20. What is your highest academic qualification?

21. What is your gender identity?

22. What is your age category?

23. What is your nationality?

24. Anything else you would like to comment on or disclose?

25. Thank you for completing our thesis survey! If you would be interested in taking part in a 30 minute interview, please leave your email address in the box below.

Alternatively, please email al3468jo-s@student.lu.se or re4007co-s@student.lu.se.

Thanks again.

Appendix B - Reasoning behind statements of section 1 of the survey

No.	Question	Factor investigated	Source(s)
1	Overall, I am satisfied with my job	Overall job satisfaction.	Based on the definition used in this study.
2	Within my role I feel welcome to participate in decision making within the team	Inclusion	Inspired by Findler et al. (2007).
3	I am satisfied with the level of stress I experience at work	Stress	Inspired by Findler et al. (2007).
4	I am satisfied with my ability to concentrate on work tasks	Well-being	Inspired by Findler et al. (2007).
5	I am satisfied with the social interactions at work.	Inclusion (excluded from study)	Inspired by Findler et al. (2007).
6	I am satisfied with the development opportunities available and offered to me.	Fairness	Inspired by Findler et al. (2007).
7	I feel supported by my team	Social support	Inspired by Findler et al. (2007).
8	I am not currently looking for other employment opportunities	Team commitment	Inspired by Findler et al. (2007).
9	My team members welcome opinions different from their own	Inclusion	Inspired by Findler et al. (2007).
10	My team is good at resolving internal conflicts and disagreements	Social support	Inspired by Findler et al. (2007), exact wording from Levi & Slem (1995).
11	I would be satisfied to spend the next 4 years working in this team	Team commitment	Inspired by Findler et al. (2007).
12	I would recommend this team as a good team to work within	Job satisfaction **	(Hamilton, et al., 2014).

*As job satisfaction within a team environment is being measured, the mediating variable of organisational commitment has been substituted for team commitment.

** Inspired by NPS surveys where the likelihood of recommending a certain factor is a strong indicator of satisfaction.

*** Findler et al. 2007 identified a reciprocal relationship between organisational commitment and job satisfaction and therefore the questions measuring organisational commitment could also be argued to be a measure of job satisfaction.

Appendix C - Interview Guide

Formalities

At the beginning of the interviews, we introduced ourselves and explained the format of the interview and the responsibilities and the reasoning behind both thesis authors being present. We also reminded interviewees of the purpose of the interview. Then we asked if the interviewee minded being recorded and explained the reasoning behind this, i.e. for ease of transcription. We also reminded all interviewees that any information that could be used to identify them or their team would not be used in the study. In addition, if there was anything they mentioned and then afterwards felt uncomfortable for us to include in the thesis, there is, of course, the option to retract statements and the information be excluded. During the introduction we also made sure to thank the interviewees for taking their time to participate in the interviews.

Information about the team

1. Would you like to tell us a little bit about your team?
 - a. What kind of work do you do?
 - b. How is the team structured?
 - c. Who does the team report to?
 - d. Where does the funding of the team come from?
 - e. What's the purpose of the team?
 - f. How many people are in the team?
2. How much time do you spend working with the team?
 - a. Is this more or less than other team members spend in the team?
3. What is your role in this team?

Effects of the pandemic to normal working life

4. In what ways has the pandemic affected your work?
 - a. How much has it affected how much you see the team?
 - b. Are you working from home or from the office?

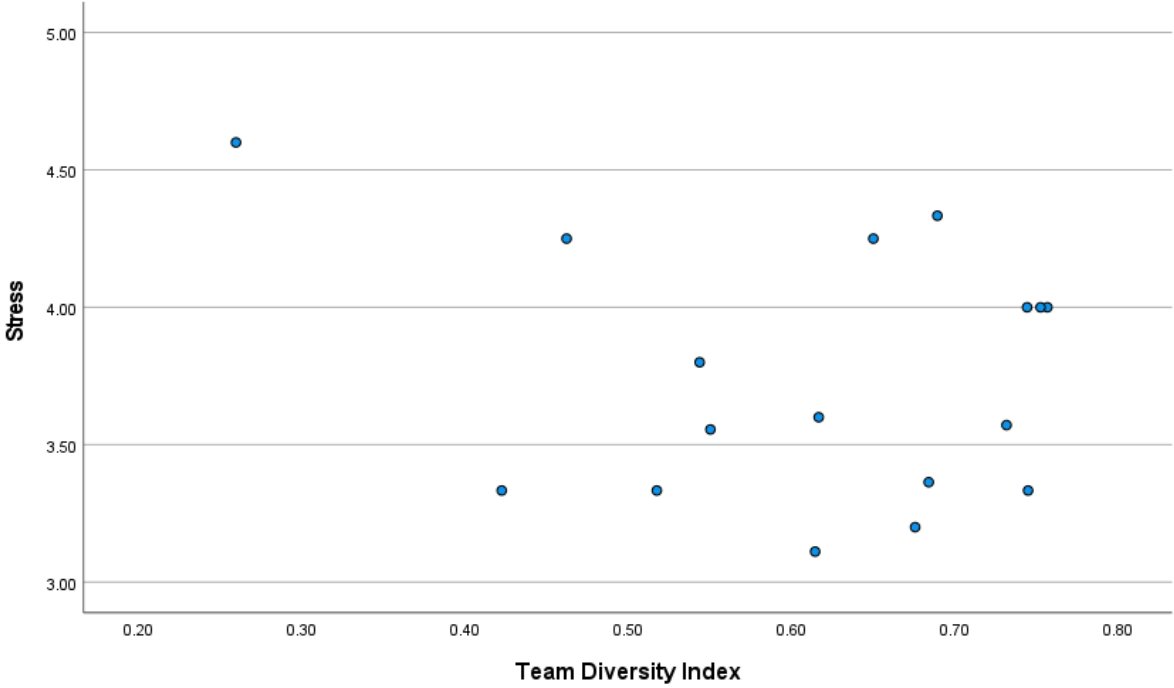
Team building

5. Have you taken part in any team building?
 - a. If yes, what type of team building? What did you do?
 - b. If yes, how much time was spent doing this?
 - c. If yes, who was responsible, external or manager?
6. Do you do any activities outside of work with the team?
 - a. If yes, what kind of activities do you do?
 - b. If yes, how often do these activities take place?
 - c. If yes, does everyone join?
 - d. If yes, who is responsible for planning these activities?

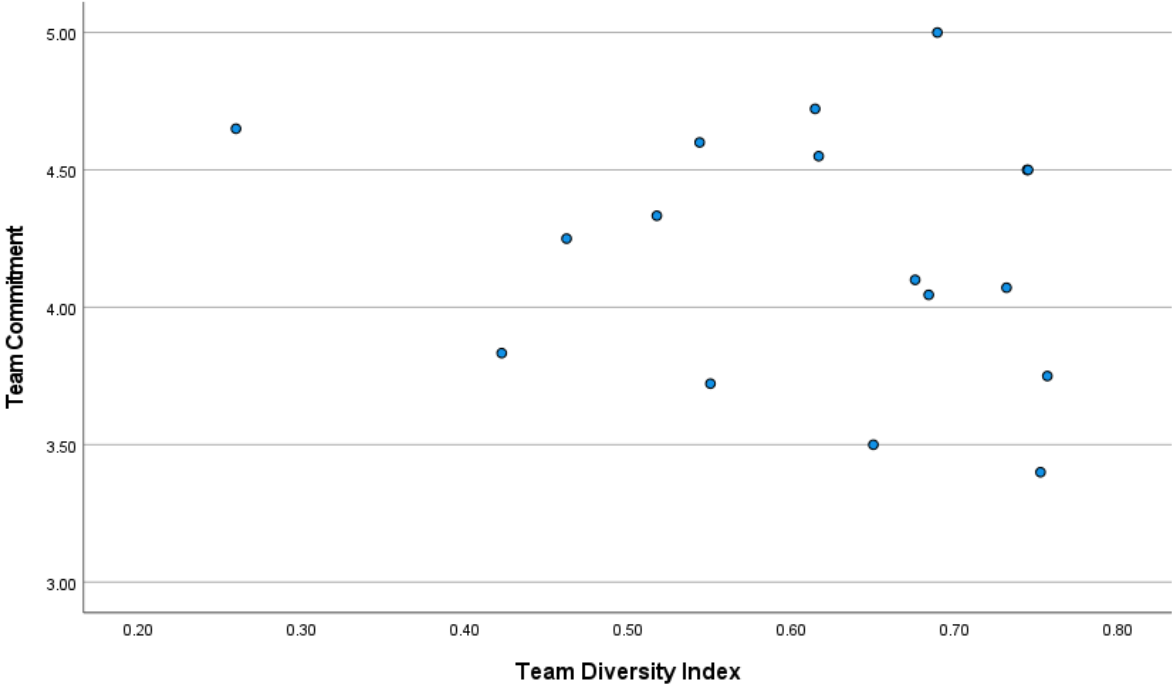
Diversity training and diversity management

7. Have you taken part in any diversity training in your team?
 - a. If yes, what type of training?
 - b. If yes, how much time was spent doing this?
 - c. If yes, what did you do?
 - d. If yes, who was responsible, external or manager?
 - e. If yes, did it help?
8. Do you feel a need for more diversity training in your group?
9. If you wanted to take part in diversity training, would you be supported by the rest of the team? (regardless of previous answer)
 - a. Would you feel comfortable raising this to the rest of the team?
10. If there were any diversity related problems, who would you turn to?
 - a. Is there a procedure that you can follow, whether this is formal or informal?
11. Is the diversity in the group discussed within the team?
12. Do you think that increased diversity within the team would be beneficial?
 - a. If yes, why?
 - b. If no, why not?
13. Do you think the diversity within the group has caused any challenges or could cause any challenges?
14. As you know our study was described as looking into diversity and employee satisfaction, do you think your answers would have changed had we discussed this using the label of job satisfaction instead of employee satisfaction?

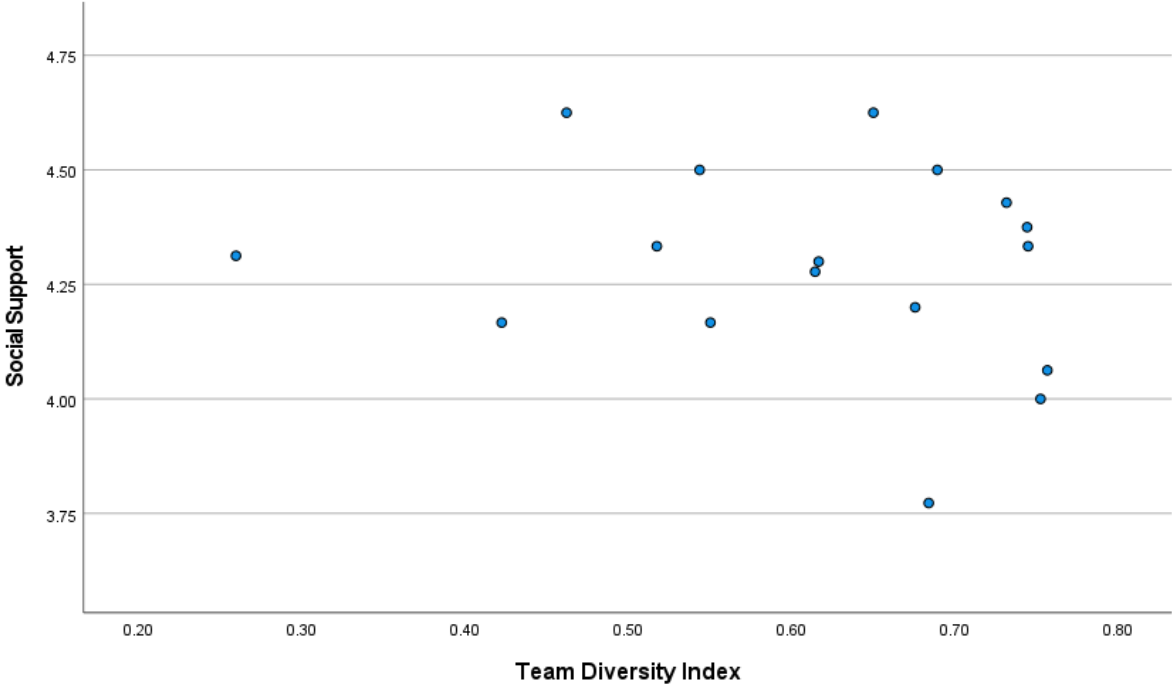
Appendix D - Results from Investigation into relationship between Team Diversity and Stress (H3)



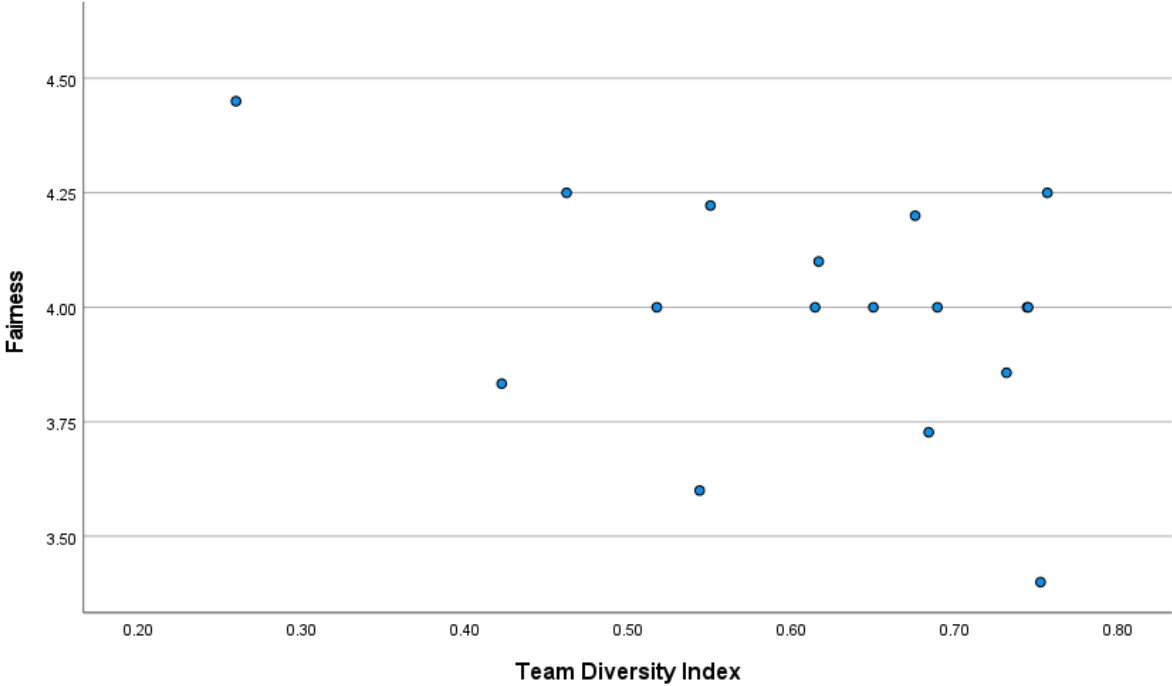
Appendix E - Results from Investigation into Relationship between Team Diversity and Team Commitment (H4)



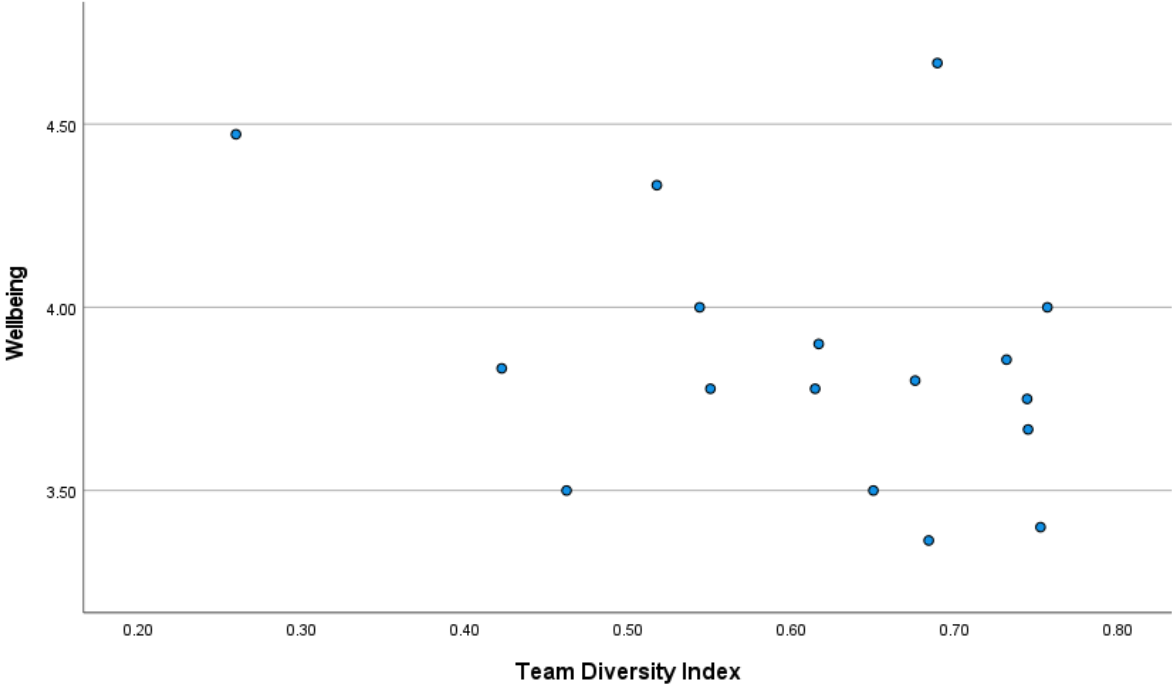
Appendix F - Results from Investigation into Relationship between Team Diversity and Social Support (H5)



Appendix G - Results from Investigation into Relationship between Team Diversity and Fairness (H6)



Appendix H - Results from Investigation into Relationship between Team Diversity and Well-being (H7)



Appendix I - Correlations between mediating variables and both measurements of job satisfaction.

		PEARSON Correlations		SPEARMAN Correlations	
		Measurement One of Job Satisfaction	Measurement Two of Job Satisfaction	Measurement One of Job Satisfaction	Measurement Two of Job Satisfaction
Inclusion	Pearson Correlation	.596**	.690***	.529**	.556**
	Sig. (2-tailed)	0.012	0.002	0.029	0.021
Stress	Pearson Correlation	0.370	.549**	0.412	0.467*
	Sig. (2-tailed)	0.144	0.022	0.100	0.059
Team Commitment	Pearson Correlation	0.475*	.720***	0.444	.771***
	Sig. (2-tailed)	0.054	0.001	0.075	0.000
Social Support	Pearson Correlation	0.440*	.684***	0.410	.794***
	Sig. (2-tailed)	0.077	0.002	0.102	0.000
Fairness	Pearson Correlation	.569**	.548**	0.447*	0.332
	Sig. (2-tailed)	0.017	0.023	0.072	0.193
Wellbeing	Pearson Correlation	0.376	.783***	0.192	0.480*
	Sig. (2-tailed)	0.137	0.000	0.460	0.051

* Correlation is significant at the 0.1 level (2-tailed).

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

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