UNIVERSITÀ DEGLI STUDI DI NAPOLI
"FEDERICO II"

Dipartimento di Studi Umanistici

Dottorato di ricerca in Scienze Psicologiche e Pedagogiche

Indirizzo di Analisi dei Processi Psicologici Normali e Patologici
Ciclo XXVII

Ethnicity and work-related stress: Migrant workers in Southern Italy

Dottorando:
Roberto Capasso

Supervisore:
Prof.ssa Maria Clelia Zurlo
Co-supervisore:
Professor Andrew P. Smith
Cardiff University

Coordinatore:
Prof.ssa Maura Striano

A. A. 2013/2014

*Ai miei genitori e la
mia famiglia,
valore inestimabile
in ogni "viaggio"*

Table of contents

Chapter 6: A proposal of Ethnicity and work related stress model: individual differences, work characteristics, ethnicity dimensions, appraisals and health outcomes   128

Chapter 8: Ethnicity and Work related stress: Meta-analysis of data

Chapter 9: Final summary of objectives and implications for further research

References

Appendix

List of tables

health

List of figures

Acknowledgements

Chapter 1: Introduction

1.1 Background

This thesis was developed and completed in collaboration with Cardiff University (Centre for Occupational and Health Psychology). The Centre for Occupational and Health Psychology (COHP) was founded in 1999 to conduct research into the effects of occupational factors on health and performance efficiency. In addition, COHP investigates risk factors relating to ill-health and examines the effects of health-related behaviour and health status on cognitive performance, mood and physiological functioning.

My period of study in the Centre made an important contribution to this project in terms of providing me with the opportunity to learn more about work stress research, different approaches and models, research methodology and statistical analyses.

In particular my research interest was in ethnicity and occupational health, a topic that in the past has been an under researched area with very little research on it, and even less on discrimination experiences, cultural identity, acculturation strategies and health outcomes among workers.

In the last decades, Italy registered an increase of about 300.000 people to the present number of more than three million immigrants (4.035.000) and the growth of informal employment during the "open door" policy of the late 1990s and the law 943/86, article 4, paragraph 1, which protects the right to family reunification, have all influenced the processes of migration and settlement in Italy. For this reason general issues such as challenges faced by immigrants in adjusting to new lifestyles, the impact of the socio-cultural context of local ethnic communities and the problems related to occupational health and the relationships with and within the work environment are become relevant and need to be investigated.

Therefore the purpose of this study was to investigate the reported occupational stress and psychophysical distress in a sample of workers, differing in ethnicity, in Southern Italy and to understand the reasons for differences in occupational stress between ethnic groups in order to propose a model of stress that integrates ethnicity and work-related aspects in a transactional perspective.

For this project, I spent two years and half studying the socioeconomic conditions of ethnic minorities in Southern Italy and the literature on ethnicity, work stress and psychophysical distress. During this period I worked as volunteer psychologist in different associations of immigrants which provided help with looking for jobs, family reunification, socioeconomic support, psychological support around the biggest cities of Naples and Caserta where I carried out qualitative interviews on general life, employment, relationship with the host country, economic and family conditions and experience of discrimination. The period spent in these associations was helpful in defining the aims of this project and selecting the study sample on the basis of the following inclusion criteria: being a member of one of the largest ethnic communities around Naples and Caserta (Eastern European, Moroccan and Ghanaian), being in paid work, regular employment, aged between 25-45 years and language capacity. How these inclusion criteria were defined and the procedure of data collection will be described in the description of the sample later in the thesis.

Therefore next section will look at in more detail the objectives of the thesis and how they are matched in this study.

1.2 Objectives of thesis

Each chapter of the current thesis focused on specific aims, critical issues and implications about this topic and our proposal of ethnicity and work-related model.

The objectives of this study were designed with both research and practical application in mind:

1) To identify the potential problems of conceptualising and measuring ethnicity and the literature on ethnicity and occupational mental health, occupational physical health and work stress.

The first step of the project was to identify the critical issues related to cultural dimensions in the literature on stress and wellbeing at work. Chapter 2 presents a systematic review of previous studies on ethnicity and occupational health. Most of these studies measure ethnicity as a descriptor of population studied or as an objective category (i.e. country of birth, nationality, language, skin color, origin and racial group) but cultural dimensions are very complex because they are related to three core concepts: acculturation, discrimination and ethnic identity. Therefore the gap in the work stress literature on different aspects of ethnicity was identified and the key conclusion of this Chapter was the necessity to consider all the cultural dimensions before investigating the associations between ethnicity and occupational health.

2) To examine the ethnicity dimensions in the associations with occupational health.

In order to confirm that ethnicity is not only a descriptor of the population studied, the project investigated the main effects of ethnicity variables on psychophysical health (Chapter 3). All aspects of ethnicity, such as acculturation, perceived discrimination and ethnic identity, were considered in these associations and the results of the analyses confirmed the importance of giving more attention to these dimensions suggesting that ethnicity could be considered an individual difference or as a potential source of stress.

3) To examine the relationships between ethnicity variables, work characteristics and job satisfaction/stress considering each aspect of ethnicity in the forms of descriptor, acculturation strategies, cultural identity and perceived racial discrimination.

In order to propose and evaluate a model of stress that includes individual differences, work characteristics, cultural dimensions, appraisals and health outcomes it was useful to investigate the main effects of ethnicity and its associations with perceived job satisfaction/stress and job characteristics (Chapter 4). The findings confirmed the main effects of the cultural dimensions on occupational stress, providing the starting point for Chapter 5 where the major theoretical models of stress and work related stress are described. This allowed the ethnicity dimensions to be integrated with this specific research area and suggested a model of stress with a transactional perspective.

4) To describe the major theoretical models of stress and work related stress in order to understand how ethnicity should be considered in this specific area and to propose a model of stress that integrates ethnicity and work related stress.

Many different models of workplace stress are described and reviewed in Chapter 5. These include: Person-Environment fit, the Job Characteristics Model, and the Michigan Model, some of the most currently popular and influential work-stress models, including the Demands-Control Support and Effort-Reward imbalance models, Lazarus and colleagues' Cognitive theory of Psychological Stress and Coping, and the Transactional viewpoint of Cox and colleagues. Finally, other notable new approaches that build on some of the above models are described, such as, the Job-Demands-Resources model, the Demand-Induced-Strain-Compensation model and the Demands-Resources-Individual Effects model. Chapter 5 underlines the important role played by individual differences in the stress process and the potential role of the ethnicity variables as individual differences or sources of stress. Considering the lack of models that integrate aspects of traditional job stress models with all the ethnicity variables, the key conclusion of this Chapter was the necessity to propose

and test a model of stress that integrates ethnicity and work related aspects of job stress using a transactional perspective.

5) To propose an ethnicity and work related stress model and investigate the associations between individual differences, work characteristics, ethnicity dimensions, appraisals of stress and job satisfaction and health outcomes in a migrant working population in South Italy.

On the basis of the literature on stress models, the specific research on migrant workers and the results reported in the previous chapters, a transactional model of ethnicity and work stress (taking a cue from the DRIVE model) has been formulated which simultaneously compares a number of job characteristics, individual differences, ethnicity dimensions and appraisals in the prediction of psychophysical health conditions in migrant and Italian workers. Therefore different types of statistical analyses including correlations, factor analyses, chi square analyses, logistic regression analyses were carried out for the whole sample and the results from this part of the study (Chapter 6) confirmed the main effects predicted by the model in terms of psychophysical disorders.

6) To report the application of the proposed model in each ethnic group to show different profiles of associations.

Three studies, one on each ethnic group and their relative control groups, are reported in Chapter 7. In particular our proposed model was tested for each group of migrant workers and Italian counterparts and the results partially confirmed the hypotheses predicted by the model and the presence of different profiles of associations in each ethnic group. Therefore, while certain aspects of the results were encouraging, it was clear that more research was needed on

some aspects of the model, in particular to test the influence of ethnicity and job type on reducing confounding factors.

7) To show a meta-analysis of the individual groups to focus on the differences and similarities between the individual groups.

The notable differences between the groups in the associations of work characteristics, individual differences, appraisals and cultural dimensions with psychophysical health disorders are shown in the meta-analysis reported in Chapter 8. In particular, most of the associations between the independent variables and outcomes were similar for each ethnic group. In order to determine whether the main effects are influenced by ethnicity, those in the same job types were considered and few differences were found by ethnicity. Essentially, for most of these associations ethnicity seemed to be independent and the influence of job type seemed to be significant.

8) To focus on the limitations of this project and further research.

This research identified the following critical issues (Chapter 8) that are proposed for further research:

a) Confounding factors in the comparison between different ethnic groups and different jobs;

b) Differences and similarities for same type of workers varying in ethnicity (influence of ethnicity or job type in the workplace);

c) The interaction effects of work characteristics/perceived job stress and cultural dimensions in the prediction of health conditions (mediators and moderators);

d) The role of perceived job stress and perceived job satisfaction in the application of the model.

e) The role of personality behavioral patterns linked to cultural dimensions.

Therefore in the stress area each aspect of the ethnicity dimension can be relevant and needs to be considered to understand the possible role of the culture in work-related stress research and to develop and test a general model that integrates a transactional model of stress with the different cultural dimensions.

On the basis of the previous research on ethnicity and occupational health in migrant workers, the gap in the literature on cultural dimensions and stress at work and the debate on the role of culture in the work stress models; the resulting research was intended to propose and test an ethnicity and work stress model that would combine aspects of traditional job stress models with individual differences in the forms of coping styles and personality behaviours, appraisals (job satisfaction/stress) and all the ethnicity variables in the prediction of psychophysical health outcomes. These aspects will be helpful in the development of psychological interventions to support migrant workers in the relationships within and with the work environment in the host country.

Chapter 2: A literature review: ethnicity and occupational health

2.1 Chapter introduction

This chapter describes the socio-economic conditions of ethnic minorities in Italy and the most relevant studies on ethnicity and occupational health.

In accordance with the literature on stress and wellbeing at work, ethnicity and culture represent critical issues because there has not been enough consideration of them in studies of work stress. Measures of work characteristics and/or work stress have been generally developed within single ethnic group datasets and there are only a few studies that investigate the relationships between cultural dimensions and occupational health in any depth.

This chapter, therefore, describes the potential problems of conceptualising and measuring ethnicity and the literature on ethnicity and occupational mental health, occupational physical health and work stress. Most of the studies discussed measure ethnicity as a descriptor of the population being studied or as an objective category (i.e. country of birth, nationality, language, skin color, origin, racial group).

Cultural dimensions are very complex because they are related to three core concepts: acculturation, discrimination and ethnic identity. For this reason my study tries to integrate all these aspects of ethnicity before investigating any associations between ethnicity and occupational health in a sample of migrant workers in South Italy.

Finally, this discussion on the meaning, measurement and relationships of ethnicity introduces the rationale behind the research and the preliminary analyses of data described in Chapter 3.

2.2.1 Ethnic minorities in Italy: socioeconomic conditions

This section provides an overview on recent immigration phenomena in Italy, entailing its demographic, social and cultural aspects. Three general issues are singled out: 1) challenges faced by immigrants in adjusting to new lifestyles, 2) the impact of t h e socio-cultural context of local ethnic communities and 3) the influence of culture on family socialization.

Italy has a long history of emigration and a very short experience of immigration. Even though this country became a destination for significant numbers of migrants later than other European states, it is now a desirable place to settle for a number or different ethnic groups. It has been suggested that this shift occurred in the second half of the 1980s, when there were about 100,000 foreign workers in Italy, as a consequence the closure of the borders due to the economic downturn in Britain, France and Germany (Martiniello, 1996; Reyneri, 2002). For a number of reasons, Italy is currently experiencing increased immigration. During the last two decades, Italian governments, in line with other European countries inspired by European policies (such as the right of EU citizens and their family members to move and reside freely within the territory of the Member States, the introduction of "EU Blue Card" to facilitate access to labour market and the permission for seasonal employment), have become more sensitive to the increasing numbers of documented and undocumented migrants.

The growth of informal employment during the "open door" policy (end of the 1970s and all of the 1980s), have all influenced the processes of migration and settlement in Italy (Reyneri, 2001). Italy adopted an "open door" policy characterized by nearly non-existent regulation, and scarce external controls and security procedures. Thus, most of the immigrant pioneers easily entered a visa-free Italy and settled into the country either by working in the informal economy or finding a loophole in Italian legislation. Only in the 1990s, a time when a large percentage of

immigrants were still undocumented, the legal entitlements of immigrants still undefined, and the process of integration still nonexistent, did provisions progressively get introduced. These allowed the legal admittance of non-EU citizens and created legal channels of entry, including the facilitation of entry of lawful labor migrants. However, the problem of irregular migration had always been dealt with using inadequate instruments, promoting ex-post adjustments through regularization schemes rather than foster new regular flows from abroad. Regularization schemes are special provisions of the Italian law on migration which enable irregular immigrants already living in Italy and who meet specific requirements to rectify their irregular stay in the country and obtain a residence permit. During the period between 1986 and 2009 Italian governments enacted six regularization schemes that received 1,744,744 applications of regularization. The effect of these regularizations seems not to have reduced the illegal immigration; on the contrary, they seem to have left a "back door" open to irregular immigration and have effectively attracted new irregulars into the country.

This period was "critical" for the migration process and for the policy of "integration" of immigrants in Italy. In fact, as a consequence of law 943/86, article 4, paragraph 1, which protects the right to family reunification, many immigrants decided to plan their future in Italy and be joined by family members. Furthermore, Italy has reached mutual agreements with some countries such as Albania, Ukraine, Poland, Romania, Serbia, Morocco and Tunisia, granting annual quotas for immigrants.

In 2002, the Bossi-Fini Law (Legge 89/02) was followed by the largest ever program in Europe with 700,000 applications and over 600,000 permits granted (Carfagna, 2002). An additional migration-inducing procedure is the sponsorship scheme, which allows anyone legally resident in Italy to invite someone for work or to look for work. This allows foreign citizens to enter

Italy for a fixed period of time, thus exhausting the quota of 15,000 sponsorship places in the first year of adoption of the scheme within a few days.

The economic development of Italy, facilitative legislation procedures, and labor demand are all factors that seemed to have influenced mass immigration to the country. As both a result of and a response to these factors, immigration to Italy displays a set of characteristics that clearly distinguishes it from immigration to the rest of Europe.

In order to better understand the relevance of the recent migration developments in Italy, a useful starting point may be the examination of data concerning the registered presence of non-Italian residents and their specific cultural, socio-demographic and territorial distributions.

In the last decade, Italy registered an increase of about 300,000 people to the present number of more than four million immigrants (4,859,000). The immigrant population is 5.2% of the native Italians meaning that one in every 19 residents is a foreigner. Although a substantial proportion of these migrants initially entered the country as transit travellers to other wealthier and more-established migrant communities in Europe, most of them decide to remain in Italy because of difficulties in moving further north (Reyneri, 2001).

Within Italy there are significant regional differences in socio-economic development between the North and the South, which strongly affect mobility. As a result, immigrants are very unevenly distributed geographically. They tend to be located in regions more industrialised where demand for work is higher and more facilities make the integration of immigrants easier and faster. In fact, the highest number of immigrants reside in North Italy (61%) compared to Central (27%) and South (12%) Italy. More precisely, 27% of immigrants live in North-East Italy, 34% in North-West, 27% in the Central and 12% in the South regions. The Italian immigrant population is extremely young. This fact is sustained by the substantial percentage

(70%) of immigrants falling in the range of 15 to 44 years of age, which is higher than that of the Italians (47.5%). Another distinctive characteristic is the unequal territorial distribution of the child immigrant population. The majority of child immigrants live in the North Italy and the mean age of the total immigrant population ranges between 29 and 30 years.

There are also a variety of regional patterns according to place of origin. Eastern-European immigrants from former Yugoslavia and USSR became the fastest growing communities, accounting for the most important groups in the recent legalization procedures (Del Bocca & Venturini, 2005). They include Albanians (348,813), Romanians (297,570), Ukrainians (118,000) and Serbians (64,070). Other significant presence has been observed for Chinese (128,000 units), Moroccan (320,000 units) and Black African (97,000 units) residents as well. Despite such significant presence of foreign residents, there is still a huge gap in their successful integration within the local system and native population.

The literature and debates on migration issues provides evidence for many of the difficulties and challenges immigrants face in adapting in Italy. I wish to focus on five of them, not only because they are the most relevant for immigrants, but also because they offer particularly meaningful starting points for the study of psychological and socio-cultural adjustment outcomes: lack of Italian language and socio-cultural system knowledge; insufficient regularization or illegal status; inadequate housing; lack of education and job opportunities and negative social perception by the host Italian community.

About the 10% of the total amount of immigrants in Italy are unfamiliar with language, culture, administrative procedures or access to social services. For most of them, it takes time both to gain knowledge of how the local socio-economic system functions as well as to develop a community support network in order to be part of that system (Fondazione ISMU,

2013). A relevant number of all migrants in Italy (about 326,000 not regular, 60.000 refugees) are affected by changing or insecure status due to administrative barriers and difficulties (Fondazione ISMU, 2013).

Another relevant problem for most immigrants is difficult housing and inadequate living conditions. This derives partly from the resistance of householders to let their houses to foreigners, with those that do so, often charging very high rents (Agustoni, 2006). According to recent estimates at least 860,000 immigrants experience housing problems, with a further 250,000, unable to be registered as regular residents because of missing or problematic housing (Caritas, 2006).

As far as education is concerned, most migrants who enter Italy are not poorly educated or from rural areas, but either middle-class or highly-educated people from large cities. Although recent data show that nearly 60 percent of immigrants have adequate schooling, there are wide differences in their job types. In terms of occupational characteristics, 73 percent are registered as manual workers due to combination of causes which result in an under-evaluation of their education levels and difficulty in finding a job. Opportunities for migrants in Italy are at the lowest occupational level even for the highly-educated ones. Thus, highly-educated migrants are either unemployed or work in undeclared and occasional jobs (Reyneri, 2004).

An important phenomenon which affects immigration characteristics in Italy is that the regional divide is particularly sharp. In fact, issues of immigrant integration are intertwined with specific regional differences.

This divide is reflected in the stronger support for anti-immigrant parties prevalent in the North of Italy in spite of the high demand for migrant labor in this region (Zamagni, 2000). For

example, in 2005 the National Unit Against Racial Discriminations (UNAR) dealt with 867 cases of discrimination against immigrants regarding labor access and housing. The highest percentage (37.6%) of such acts was registered in North Italy. During the last decade, the reactions of the native Italian population towards immigrants have become increasingly hostile. Concern about negative consequences of immigration on unemployment has been frequently expressed, while xenophobic and even racist attitudes have led to violent incidents against immigrants. Two economic explanations are provided to account for such attitudes: people's fear of losing their jobs and the poor living and working conditions of immigrants due to their low socioeconomic status (Triandafyllidou, 2000). A study conducted in 2000 found that 42.8% of Italians feared immigration increased crime, while others feared it would threaten their cultural identity (25.2%) and employment (32.3%) (Diamanti, 2001).

Also, Italians are afraid that migrants working in the formal or informal economy could become competitive, thus "stealing" their jobs (Del Bocca & Venturini, 2005). These general reactions of fear from migration to Italy are also associated with security issues regarding the fact that most Italians perceive immigrants' presence as a risk for increased crime rates. Such security concerns are at their highest in Northern Italy and particularly in the North-Eastern regions, surpassing those related to employment and economic issues (Valtolina, 2006).

The processes mentioned above are complemented by prejudiced views against specific nationalities of immigrants. While many of these difficulties are common, the Italian immigrant population is extremely diverse, according to territorial distribution, language, cultures of origin and perceptions by the members of the receiving society. Their experiences vary individually, depending on each of these factors, which may facilitate or aggravate the process of adaptation to the receiving country, region and society.

Within the framework of an intense growth of immigrant flows in Italy, their younger component plays a major role, thus deserving particular and careful examination. At present, there are 424,683 immigrant students in Italian schools, with the majority in nursery and primary schools. The most represented nationalities are Moroccan and Chinese, which make up 52% of the total immigrant students.

2.2.2 Migrants in Southern Italy. A brief summary

Considering the current project this section discusses the specific aspects of the immigrant population in the area of South Italy, pointing out regional, socio- demographic and ethnic characteristics.

As reported above, the ethnic minority population of the Italy is around 4 million and 13% of these live in South Italy where the largest ethnic minority groups are Eastern European (48.7%), North African (19.7%), Chinese (17.7%) and Black African (13.9%).

More than half (70%) of the ethnic minority populations of South Italy live in Campania around the biggest cities of Naples and Caserta where this study was carried out. Our study has focused of this area because in the last years it stated a huge growth of migrants affected by the following problems such as socio-cultural system knowledge; insufficient regularization or illegal status; inadequate housing; lack of education and episodes of discrimination. At the same time a relevant presence of associations that support the immigrants give me the opportunity to work as volunteer, to understand their needs and to propose a research' project promoting psychological and social interventions. In this area Eastern European, North African and Black African workers with regular status were selected as participants because my interest was in comparing migrant working population with Italian counterparts and get a map of differences and

similarities. In fact the not regular migrants (or illegal) needed a different support (social and legal) to begin as soon as possible a more adequate process of integration in the host country and for this reason it was not possible to involve them in this study.

Moreover it was excluded the Chinese workers because there were not similar services that could introduce me as volunteer and essentially this ethnic group creates closed communities in our area (as in most of the countries where they migrate) based on improving their business (mostly trade) and is not interested in a process of acculturation in terms of integration.

Among the selected groups, it was interesting that most of them were still first generation immigrants but in the last 5 years within the North and South African communities we can see family reunification and the birth of children in Italy. This happened for two reasons: firstly, these ethnic groups were settled in Italy for a long time (in particular they started moving in the beginning of 1980s) and this facilitated the process of getting a regular job and applying for family reunification, nationality and family rights; secondly because their project of immigration was not temporary only to earn money and send to their families (as for the Eastern European) but also to escape from their countries involved in civil war and financial crisis.

In South Italy, the Eastern European group has the highest proportion of people aged between 40 and 50 years; 90% are women with a high level of education (for example with qualifications as nurses, and accountants). Most of these women work as care workers for the elderly, full-time, with fixed contracts and they earn around 800 euros/month. Normally their families do not join them because they go back to their home country after earning enough money for their personal needs.

It is interesting to consider the potential Italian counterparts of these workers because these jobs are almost exclusively filled by these women due to the working conditions which require

cohabiting with the elders 24 hours a day. It may be possible evaluate some kind of Italian care workers that work in specific services for elderly person but the presence of shifts work and different salary might be very relevant in terms of comparisons. For this reason, these aspects influenced the selection of control groups in the study.

The North African group has the highest proportion of people aged between 35 and 45 years and 78% are men with a medium level of education. Most of these men work as factory workers, part time, with temporary contracts and they earn around 600 euros/month. In the last 5 years they have started to live with their families in Italy. Essentially the Italian factory workers get permanent contracts and higher salary that might give more social and financial security but at the same time the presence of the North Africans in this sector of occupation is going to create competition and hostility situations.

The Black African group has the highest proportion of people aged between 30 and 40 years and 70% are men with a medium level education. Most of these men work as manual workers, part-time, with temporary contracts and they earn around 400 euros/month. Only a few of them try to create a family in Italy. The Italian masons in the construction sector as the factory workers get permanent contracts and higher salary and in this case the employers prefer to hire migrants not only for the less cost but also for their general health conditions more useful for this kind of physical demanding job.

Finally considering these three ethnic groups and the job type, it is important to underline that school education, genetic predispositions and body structure, behavioural patterns and previous working experience are aspects that facilitated the access of each ethnic group to specific occupational sectors in Italy.

After this discussion on socio-economic conditions of immigrants in Italy, it is important to

focus on the concept of ethnicity in order to investigate the complex issues set out above.

2.3.1 Problems of conceptualising ethnicity

Huxley and Haddon (1935) first suggested that the term 'race' should be replaced by ethnicity, since the latter was devoid of the political connotations of racial difference.

Ethnicity could be defined as a nation or group who share one or all of the following: a common nationality, culture, language, race, religion and common descent (Betancourt & Lopez, 1993; Costa & Bamossy, 1995; Hirschman, 1983; Phinney, 1996; Venkatesh, 1995).

Betancourt and Lopez (1993) support this argument adding that there are often greater differences in, rather than between, racial groups making any comparison on the basis of skin colour and hence race irrelevant; an argument supported by Zuckerman's (1990) genetics argument. This makes categorisation of people by racial characteristics extremely difficult (Jones 1991; Zuckerman, 1990) and use of the term 'ethnicity' more appropriate.

Venkatesh (1995) argues that ethnicity is an ideologically fashioned term to describe a group which is culturally and/or physically outside the dominant cultures of the day. This implies ethnicity only becomes apparent or experienced when one is in a minority. Therefore ethnicity is a general concept associated with being immigrant in a host country and all the social aspects were influenced by this minority status with particular attention to the work conditions.

Defining ethnicity is not helped either in the health service. The common measures of ethnicity in health settings are: physical attributes (Harrison et al, 1988); physical attributes plus place of birth (Dunn & Fahy, 1990) or place of parents birth (McKenzie et al, 1995); hospital notes (Perkins & Moodley, 1993); hospital notes plus discussion with health staff (Sugarman & Craufurd, 1994) or country of birth (Davies et al, 1996); discussion with health staff alone

(Flannigan et al, 1994); self-assigned ethnicity (King et al, 1994).

Alternative definitions of ethnicity focus upon migration and resulting minority status. Many anthropologists, psychologists and sociologists generally agree that ethnic categories are imprecise and arbitrary, "social constructions rather than natural entities that are simply 'out there' in the real world" (Waters & Eschbach, 1995). Even in an ethnic group whose members share a relatively precise ethnic label there is tremendous heterogeneity. This heterogeneity has been examined in terms of social class and education, generation of immigration, geographical region, family structure and size and composition of the ethnic community, among other factors that differentiate subgroups (Harrison et al, 1988). Due to in-group variation, ethnic group membership alone cannot predict behaviours or attitudes in any psychologically meaningful way (Phinney, 1996). Barth (1969), de Vos (1975) and Venkatesh (1995) conclude that ethnicity should instead be defined by self-identification of the group concerned, mediated by the perceptions of others.

Ethnicity is associated to the concept of "culture". In 1952 Kroeber and Kluckholm cited 164 definitions of culture, illustrating the difficulty in achieving a comprehensive definition. By 1981 Budde et al. stated researchers were still unable to conceptualise and define 'culture'. Triandis et al (1986) describes culture as "a fuzzy, difficult to define construct". Furthermore, LaFramboise et al (1993) criticise definitions of culture for either omitting a salient aspect of culture or generalising beyond any real meaning.

Culture, therefore, can be defined as the assets of a group, passed on from generation to generation, which include knowledge, beliefs, fantasies, ideologies, symbols, norms, values, and the provisions of that action by all these claims, and that result in schemes and techniques of activity typical of any society.

The variable "culture" is related to three core concepts:

- Acculturation represents "phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both group" (Redfield et al., 1936);

- Ethnic identity is the feeling of being included in a group or culture;

- When people insult other people, make fun of them, or treat them unfairly because they belong to a certain racial/ethnic group, this is called discrimination (Noh & Kaspar, 2003).

Therefore, this discussion on the definition of the terms "ethnicity" and "culture" could be relevant to understanding the possible role of ethnicity dimensions in the relationships with health outcomes and exploring the different ways of measuring ethnicity.

2.3.2 Measurement of aspects of ethnicity

Defining and measuring ethnicity has never been easy, especially as what the terms embraces is constantly evolving. However, it is vitally important that we do measure ethnicity and that we do so in a way that is relevant to give closer attention to its related variables like acculturation strategy, ethnic identity and perceived discrimination and useful to not reduce its meanings and all the potential associations with health conditions.

The concept of ethnicity changes over time and the notions of race, ethnicity and nationality are mixed up together. There are different ways of measuring ethnicity. Most measures are based on categorizations (see section 2.3.1 above) but ethnicity is not a static concept and ethnic group is a self-defined category.

Only a few studies have examined the effect of ethnicity on relative risk of physical problems (Wagener et al., 1997; Tait and Chibnall, 2001; Gorsche et al., 1999). Most studies

incorporated ethnicity as a descriptor of the population studied; some used multivariate analysis to obtain relative risk figures (Aroian & Norris, 2000; Aroian, Norris, Patsdaughter & Tran, 1998; Berry, Kim, Minde & Mok, 1987; Frye & D'Avanzo, 1994; Furnham & Sheikh, 1993; Hattar- Pollara & Meleis, 1995; Kim & Rew, 1994; Lipson, 1992; Lipson &Miller, 1994).

In accordance with Modood et al. (1997) only large scale national studies (Codagnone 1998; Phalet and Swyngedouw 1998; Favell 2003) designed exclusively with the aim of increasing our knowledge about the circumstances of ethnic minorities do this.

In some studies reported in the literature, ethnicity was measured in terms of ethnic group, ethnic identity, language, discrimination, racial prejudice, racial harassment, attitudes to immigrants but all these aspects were considered separated (Roberts et al., 2004; Smith, 2005; Nazro, 2003; Karlsen, 2005).

For this reason, this study tries to integrate all the main aspects of ethnicity such as acculturation, racial discrimination and ethnic identity to investigate their relationships with occupational health and to propose ethnicity not only as a descriptor but also as an individual difference or a potential source of pressure in models of stress.

The sections below describe the major studies on ethnicity and psychological health, physical diseases and work stress. Most of them measure ethnicity using objective categories or some of the aspects reported above.

2.4. Review of studies on ethnicity and occupational health and work stress

2.4.1 Search criteria

As discussed in the previous sections, there are potential problems of conceptualising and measuring ethnicity. For the purpose of this review the starting point was to search and select the studies presented in the current literature on ethnicity and occupational health in order to position our research in this area and to propose a new approach.

The search was performed using Pubmed, PsycInfo and Scopus databases. The search criteria included general ethnicity terms (such as "culture, acculturation, ethnic identity, discrimination, nationality"), general psychophysical health outcomes (such as "depression", "anxiety", "physical problems" and "occupational health"), work characteristics and occupational stress ("demands", "resources", "rewards", "job satisfaction" and "work stress"), and individual differences (e.g. "personality" and "coping behaviour") using all possible combinations of these index terms.

Each article was analysed for items listed in Table 2.1 below considering the authors and the year of publication, the ways of measuring ethnicity and job characteristics, the work-related health outcomes associated with them and the type of approach applied in each study.

Table 2.1: Information extracted from each article

1. Name of authors
2. Year of publication
3. Measure of ethnicity
4. Measure of job characteristics
5. Health outcomes
6. Approach

In particular the measuring of ethnicity refers to all the aspects related to ethnicity and cultural

dimensions (i.e. country of birth, nationality, language, skin colour, origin, racial group, acculturation strategies, ethnic identity, perceived discrimination); the job characteristics refers to occupational factors such as occupational groups (job type), employment status (type of contract, work status, salary), work environment (work stressors) and work characteristics in accordance with the major work stress models like Karasek (1979) and Siegrist (1996) models. Furthermore the last two items listed in Table 1 above reported for each study the health outcomes associated with ethnicity and work characteristics and the approaches used.

One hundred fifty-two articles were identified and on further examination of the content, some articles were removed for not including occupational health but acculturation stress as outcomes, other studies for using a sociological approach (centred on descriptions of a single social process and interpretation) and others for focusing on a transcultural psychiatry approach. Therefore sixty articles were included in the final review and most of these studies took into account ethnicity as a descriptor of the working population studied and only a few of them considered other aspects of the ethnicity. These identified studies were categorized by the health outcomes associated with ethnicity as follows: 1) studies showing ethnicity and occupational physical health, 2) ethnicity and occupational mental health, 3) ethnicity and work stress.

In accordance with these inclusion criteria the most representative studies will be described for each category in order to show what in the literature is present and to identify gaps. Of these 60 selected articles, there were 26 on occupational mental health, 13 on physical health and 21 on work stress and most of them were published in the last 30 years with the majority in the last 15 years. Working populations and ethnic groups varied among these studies. The selected articles with the extracted items are chronologically summarized in Table 2.2 below.

Table 2.2: Features of articles investigating ethnicity and occupational health

Reference	Author	Year	Measure of ethnicity	Measure of job characteristics	Health Outcome	Approach
67	Jackson et al.	1985	Nationality, episode of discrimination and harassment	Occupational group, work environment	Work stress	Occupational stress (interactional or structural)
56	Palinkas et al.	1985	Race, genetic susceptibility, cultural patterns of belief and behavior	Occupational group, work environment, occupational risk	General physical diseases	Occupational Ill Health/ work-related illness (Epidemiological)
57	Murray	1986	Different ethnic groups, and genetic susceptibility	Occupational groups	General physical diseases	Occupational Ill Health/ work-related illness (Epidemiological)
52	Bergeret et al.	1990	Ethnic origin	Occupational group, habits and work related stress behaviors (drinking and smoking, drug)	Cardio-vascular diseases	Occupational Ill Health/ work-related illness (Epidemiological)
23	Moghaddam et al.	1990	Nationality combined with sociocultural aspects	Occupational group, occupational change and difficulties	General mental health	Social and cross-cultural psychology (mixed approach)
68	Netemeyer et al.	1990	Nationality	Occupational group, work stressors	Work stress	Occupational stress (interactional or structural)
53	Chia et al.	1991	Different ethnic minorities	Occupational groups, workplace hazards, habits and work related stress behaviors (smoking and drinking)	Cardio-vascular diseases	Occupational Ill Health/ work-related illness (Epidemiological)
54	Hodgkins et al.	1991	Nationality	Occupational group, habits and work related stress behaviors (smoking)	Cardio-vascular diseases	Occupational Ill Health/ work-related illness (Epidemiological)
24	Moon et al.	1991	Nationality, cultural factors	Occupational group, alienation	General mental health	Social and cross-cultural psychology (mixed approach)
25	Thompson	1991	Nationality	Occupational group	Emotional regulation	Psychology of emotions
26	Furnham et al.	1993	Nationality, differences in generation, assimilation	Occupational group, social support.	Psychological symptomatology	Social and cross-cultural psychology (mixed approach)
49	Betemps et al	1994	Different ethnic groups	Occupational groups	Cancer	Occupational Ill Health/ work-related illness (Epidemiological)
27	Frye et al.	1994	Nationality and family aspects	Occupational group, income	General mental health	Occupational and Health Psychology(mixed approach)
69	Kandola	1994	Different ethnic groups	Occupational groups, shifts	Work stress	Occupational stress

						(interactional or structural)
28	Kim et al.	1994	Nationality and acculturation strategy	Occupational group, family income, nonprofessional occupation.	Depression	Epidemiology and culture
29	Lipson et al.	1994	Nationality, loss of status, ethnic bias, belief and values	Occupational group, occupational and financial difficulties	Anxiety, depression, somatisation	Occupational and health Psychology(mixed approach)
70	Walcott-McQuigg	1994	Nationality, harassment and gender	Occupational group, work stressors, negative work environment, social interactions	Work stress and work related stress behaviors (alcohol and tobacco)	Occupational stress and work related stress behavior
30	Hattar-Pollara et al.	1995	Nationality, cultural identity	Occupational group	General mental health	Health Psychology(mixed approach)
59	Peterson et al.	1995	Different races and cultural contexts	Occupational groups, work environment	Perceived work stress	Occupational stress (interactional or structural)
74	Ragland et al.	1995	Ethnic differences	Occupational groups, work stressors.	Work stress and work related stress behavior (alcohol)	Occupational stress and work related stress behavior
76	Ames et al.	1996	Nationality with gender (female)	Occupational group, shifts and environment	Work stress and work related stress behavior (alcohol)	Occupational stress and work related stress behavior
71	Netemeyer et al.	1996	Nationality	Occupational group, work demands, work overload (socio-psychological stressors)	Work stress and related psychosomatic problems	Occupational stress (interactional or structural)
77	Grube et al.	1997	Nationality with gender (male)	Occupational group, shifts and environment	Work stress and work related behavior (alcohol)	Occupational stress and work related stress behavior
46	Wagener et al.	1997	Nationality, country, race	Occupational group, manual and repeated activities	Back pain problems	Occupational Ill Health/ work-related illness (Epidemiological)
31	Aroian et al.	1998	Nationality, novelty, language difficulties, discrimination, not feeling at home, length of time in the host country	Occupational group, employment. status, occupational change	Psychological distress	Social and cross-cultural psychology (mixed approach)
47	Bradshaw et al.	1998	Nationality	Occupational group, years of work experience, habits and work related stress behavior (smoking)	Respiratory problems	Occupational Ill Health/ work-related illness (Epidemiological)

58	Conrad et al.	1998	Nationality, genetic susceptibility	Occupational groups, geographic position of workplace	Dermatological problems	Occupational Ill Health/ work-related illness (Epidemiological)
50	Ma et al.	1998	Different race/ethnic sub-populations	Occupational groups	Cancer	Occupational Ill Health/ work-related illness (Epidemiological)
72	Spector	1998	Nationality	Occupational group, work stressors	Work stress	Occupational stress (interactional or structural)
61	Jamal	1999	Country	Occupational groups, work demands, over-time work, income, job satisfaction	Work stress	Occupational stress (interactional or structural)
64	Klonoff et al.	1999	Nationality and episode of discrimination	Occupational group	Work stress and stress symptoms	Occupational stress and culture
60	Lu	1999	Different races and cultural context	Occupational groups, work related stressors, intention to quit, job satisfaction	Perceived job stress and job satisfaction	Occupational stress (interactional or structural)
75	Yen et al.	1999	Nationality, episode of racial discrimination	Occupational groups, workplace environment	Work stress and work related stress behavior (alcohol)	Occupational stress and work related stress behavior
32	Aroian et al.	2000	Nationality, immigration demands	Occupational groups, socio-economic factors related to employment status	Resilience, depression	Stress-resistance and cognitive appraisal of stress
34	Comino et al.	2000	Nationality	Occupational groups, employed vs unemployed	Anxiety, depression	Epidemiology
51	Schulz et al	2000	Different ethnic groups, race	Occupational groups, exposure to suspected bladder carcinogens (work environment)	Cancer	Occupational Ill Health/ work-related illness (Epidemiological)
48	Kor et al.	2001	Nationality	Occupational group	Respiratory problems	Occupational Ill Health/ work-related illness (Epidemiological)
55	Sakamoto et al.	2001	Ethnic minorities, cultural influence	Occupational groups	Cardio-vascular diseases	Occupational Ill Health/ work-related illness (Epidemiological)
62	Kurz	2002	Country	Occupational groups income, long work hours	Work stress	Occupational stress (interactional or structural)
63	London et al.	2002	Country	Occupational groups, income, long	Work stress	Occupational stress

				work hours		(interactional or structural)
17	Nazroo	2003	Different ethnic groups, social inequalities, racism	Occupational groups, economic inequalities	Work stress	Occupational stress and culture(mixed approach)
65	Troxel et al.	2003	Nationality and episode of racial discrimination	Occupational groups	Work stress and stress symptoms	Occupational stress and culture(mixed approach)
73	Milkie et al.	2004	Country	Occupational groups, income, long work hours	Work stress	Occupational stress (interactional or structural)
14	Roberts et al.	2004	Different ethnic groups, episode of discrimination and harassment	Occupational groups, job satisfaction, salary, benefits, opportunity for development and advancement, stress and burnout, sickness absence	Psychological distress	Occupational stress and culture (mixed approach)
18	Szczepura et al.	2004	Ethnic minorities groups in Britain	Different occupational groups	Work stress and work-related health	Occupational stress and culture (mixed approach)
15	Karlsen et al.	2005	Different ethnic groups, indicators of racism (Experience of interpersonal racism and perceiving racism)	Occupational groups, socio-economic factors related to employment status	Psychosis	Epidemiology
39	Panayiotopoulos	2005	Nationality combined with gender	Care workers for elderly, working conditions, segregation	Depression	Stress in care workers (management standards approach)
45	Smith et al.	2005	Nationality, Ethnic minorities, perceived discrimination at work	Occupational groups, occupational factors, work characteristics (ERI and Karasek' Models)	Psychological and physical distress, work stress	Occupational and Health Psychology (suggested global approach)
40	Degiuli	2007	Nationality combined with gender	Care workers, working conditions, segregation	Depression	Stress in care workers (management standards approach)
33	Li et al.	2007	Nationality	Occupational group, job type, economics factors (income)	General mental health	Occupational health (management standards approach)
66	Smith	2007	Ethnic minorities, perceived discrimination at work	Occupational groups, occupational factors, work characteristics (Siegrist and Karasek' models)	Work stress	Occupational and Health Psychology (suggested global approach)
16	Wong et al.	2008	Nationality, episode of discrimination	Occupational groups, working conditions, benefits	Psychological distress	Occupational and health Psychology (interactional or structural)

41	Elrick et al.	2008	Nationality combined with gender	Care workers for elderly, salary	Depression	Stress in care workers (management standards approach)
42	Doyle et al.	2009	Nationality combined with gender	Care workers for elderly, working conditions, burnout	Depression	Stress in care workers (management standards approach)
35	Liwowsky et al.	2009	Nationality	Occupational groups, employment vs. unemployment status	Depression	Epidemiology
38	Seedat et al.	2009	Nationality	Occupational groups related to gender	General mental health	Management standards approach
43	Ahonen et al.	2010	Nationality combined with gender	Care workers for elderly, physical demands	Depression	Stress in care workers (management standards approach)
44	Williams	2010	Nationality combined with gender	Care workers for elderly, work-family conflicts	Depression	Stress in care workers (management standards approach)
36	Madianos et al.	2011	Nationality, country	Occupational groups, employment status, income	Depression	Epidemiology
37	Classen, et al.	2012	Nationality	Occupational groups, employment status, risk of loss job	Depression, suicide	Epidemiology

All of the studies on occupational physical health used an 'epidemiological approach', while the papers on mental health and work stress showed a variety of approaches (interactional or structural approaches, a management standards approach and a mixed approach). Few studies suggested that a global approach must be adopted, nor did they have the capacity to address issues that are unique to any single ethnic group.

These papers are analysed in more detail in the following three sections and some other articles even if used a sociological approach and a transcultural psychiatry approach are taken into account in order to show that the topic of ethnic minorities and work-related ill-health sometimes is overlapped with these approach.

2.5.1 Ethnicity and occupational physical health

In this literature review 13 studies investigated ethnicity and occupational physical health especially in terms of musculoskeletal disorders, respiratory problems, cancer, cardio-vascular disease, exposure to harmful substances, incidents and injuries. All of the studies can be classified as "epidemiological" and focused on single associations of ethnicity such as nationality or country of birth with physical problems in different working populations.

In the UK, work-related musculoskeletal disorders have a statistically higher prevalence in four out of the eight industry sectors with the highest overall self-reported work-related such illnesses, found in agriculture, construction, health and social work, and manufacturing (HSE 2004).

In a US study, among the currently employed reporting back pain, a higher percentage of black women had back pain due to workplace accidents or repeated activities at work than white women; a similar, but less extreme, difference was observed for men. Irrespective of race, in about 1 in 4 cases the worker changed jobs, stopped working at a job, or changed work activities because of prolonged back pain problems (Wagener et al., 1997). A more recent US study of

occupational low back pain has also reported that impairment ratings and temporary total disability costs are lower for African Americans than for white workers; this was found to affect their claims and benefits (Chibnall and Tait, 2001).

A Canadian study of carpal tunnel syndrome among workers in a meat packaging plant identified that, although this was higher than the general population, there was no significant influence of ethnicity, age and body mass index (Gorsche et al., 1999).

The literature on ethnicity and occupational ill health also covered studies on basic respiratory problems (including asthma and chronic bronchitis), lung cancer and exposure levels. A study from Singapore has reported a higher level in Chinese workers, with the most common causative agent being isocyanides (Kor et al., 2001).

Other studies report on exposure to welding fumes but consider ethnic differences as a confounding factor. A New Zealand study found that work-related respiratory symptoms are related both to cigarette smoking and a measure of lifetime exposure to welding fumes when a group of welders and non-welders matched for ethnicity, smoking habits, and years of work experience were compared (Bradshaw et al., 1998).

Moreover the following three studies focus on the differences between ethnic groups in lung disease and cancer in certain occupations. A US study of wastewater treatment system workers also indicates that migrant workers are at significantly higher risk than the US white male population for various cancers, including stomach and leukemia, and diseases of the nervous system and sense organs (Betempset al.,1994). Four years later another US study has identified differential cancer mortality risks among firefighters of different race/ethnic sub-populations (Ma et al., 1998). Elevated cancer mortality rates has been identified for bladder cancer among African American and male Latinos in several occupational groups with exposure to suspected bladder carcinogens; It has also been observed among Asian males in sales, and for Asian females in the personal services industry (Schulz et al., 2000).

Other literature on ethnic minorities and workplace hazards is on lead exposure and possible genetic susceptibility. Examination of blood lead concentration among workers in a battery manufacturing factory in Singapore has identified higher concentrations among Malay workers, possibly due to oral ingestion of lead through eating with their fingers (Chia, Chia and Ong, 1991). Another study conducted by Chia et al (1996) found significant differences in the median and ulnar nerves of lead battery workers, adjusted for age, ethnic group, smoking and drinking habits. A study from the USA has found a highly significant association of blood lead levels with past exposure in lead-battery workers, after making allowance for job category, seniority, age, ethnicity, gender, and smoking habit (Hodgkins et al., 1991). Another study in USA has reported that minority groups tend to be over-represented in lead industries and that high lead levels can be compounded by cultural influences (Sakamoto, Vaughan and Tobias, 2001).

In Europe, a French study has similarly found much higher blood lead levels in exposed workers than in controls matched according to age, sex, drinking and smoking habits, ethnic origin and drug intake (Bergeret et al., 1990).

Earlier studies conducted in US reviewed genetic susceptibility, working environment and occupational risk. A study of black and white employees in the US Navy, examining a wide range of diseases, identifies the existence of subgroups within either racial group, and concludes that the relationship between race and disease is mediated by several factors, including genetic predisposition, socio-economic status and cultural patterns of belief and behavior (Palinkas and Colcord, 1985). Another review paper discusses inherited polymorphic proteins and enzymes in different ethnic groups, whether affected individuals ought to be excluded, and whether it is scientifically and ethically justified to use these markers to 'protect' workers (Murray, 1986).

More recently, the prevalence of a major antigen associated with systemic lupus erythematosus (SLE) was determined in the serum of uranium miners exposed to heavy quartz dust, and the study concludes that it may be indicative of higher risk of developing SLE in cohorts

matched for sex, ethnicity, geographic region, and occupation (Conrad et al., 1998). This particular association between race and genetic aspects appeared very interesting in terms of integration of psychological and biological aspects in the multidimensional construct of ethnicity.

Finally the literature on workplace injuries and accidents is concentrated on studies in a few occupations and industries (e.g. construction, agriculture, heavy machinery, drivers, army, police and fire fighters) and is dominated by studies of male worker. Nevertheless, the literature suggests that injury rates differ according to age, sex, ethnicity, occupation and industry (Fullerton et al., 1995; Weddle et al., 1993; Wagener et al., 1997; Cubbin et al., 2000). Research from New Zealand indicates higher rates of work-related injuries for Maoris than non-Maoris and in small factories than in large factories (McCracken et al., 2001). US literature suggests somewhat higher injury rates for Caucasian than non-Caucasian workers, but indicates greater narrowing of racial differences over time among males than among their female counterparts. Black women now face approximately the same risk of occupational injury as white men (Ore and Stout, 1997). UK research (Baker, 1987), in contrast, presents either non-significant differences in injury rate by ethnicity or lower rates for Asians than the white population. A number of studies have identified the critical role of hours of work, fatigue in prevention of accidents and injuries (Yee et al., 2002; Lilley et al., 2002). There is evidence that accidents and lost-time injuries are associated with length of time at work, ethnicity, and having had a near-miss injury event. Also, working women with young childrenat greater risk of occupational injury than those without, presumably due to fatigue associated with raising young children (Wohl et al., 1995).

All these studies confirm the interest in evaluating the associations between ethnicity and physical diseases in the occupational area and the importance of considering whether these problems are also related to work stress.

2.5.2 Ethnicity and occupational mental health

Migrant workers generally experience three major types of distress. The first is financial distress. They have to face financial ruin, and many begin to lose their lifetime savings and even their homes (Janlert, 2009). The second is physical health. Medical symptoms such as diabetes, hypertension, and coronary heart disease are associated with unemployment or type of employment (Bartley, Sacker, Clarke, 2004; Wilson, Walker, 1993). The third is mental health. Poor mental health is common among migrants (McKee-Ryan, Song, Wanberg, Kinicki, 2005; Butterworth, Leach, Pirkis, Kelaher, 2012) and job difficulties are associated with higher levels of depression (Madianos, Economou, Alexiou, Stefanis, 2011, Liwowsky, Kramer, Mergl, *et al.*, 2009), suicide (Classen, Dunn, 2012), anxiety (Comino, Harris, Silove, Manicavasagar, Harris, 2000) and psychoses (Karlse, Nazroo, McKenzie, Bhui, Weich, 2005).

Cross-cultural psychiatrists have alerted us to cultural variations in depressive mood, symptoms and illness (Kirmayer, 2000; Kleinman, 2004). Kleinman and Good (1985) caution that '''Dysphoria'—sadness, hopelessness, unhappiness, lack of pleasure with the things of the world and with social relationships—has dramatically different meaning and form of expression in different societies''.

Moreover, the culture of immigrants is not static, but changing as a result of individual and group acculturation to the host society. This will influence the risk factors and prevalence of depression (Bhugra, 2005).

Cultural elaborations can be expected to differ in their impact on each of these symptom domains: mood disturbances can be difficult to verbalize and might readily be expressed in specific, local idiom (Al-Issa, Tousignant, 1997; Bebbington, Kuipers, 1994; Kleinman, Good, 1985).

As Kirmayer (2001) outlines, universal basic emotions may give rise to metaphorical elaborations. Bhugra and Mastrogianni (2004), in an extensive review of globalization and depression, give several examples of these 'idioms of distress'. In a British-Turkish comparative clinical study,

Turkish depressive patients in Istanbul showed a higher tendency to emphasize symptoms (Ulusahin, Basoglu, Paykel, 1994). Moroccan immigrant patients in France have been described as presenting clinical pictures of 'hypochondriacal depression' verging on malingering (Al-Issa, Tousignant, 1997). A high tendency to report anxious-depressive symptoms has also been suggested as an explanation for the high levels of these symptoms found in population studies of Turkish and Moroccan immigrants in the Netherlands (van der Wurff, Beekman, Dijkshoorn et al., 2004) and Belgium (Leveque, Lodewyckx, Vranken, 2007).

Two decades of research with various immigrant workers groups have yielded fairly consistent findings about the personal and situational variables associated with immigrants' psychological disorders. Specifically, unemployment, kind of job, occupational change, lack of local family, female gender, not being married, pre-migration loss, novelty, language difficulties, discrimination, and not feeling at home have been associated with depression and anxiety in Asian, Southeast Asian, Middle Eastern, Latin American, Eastern European, African and Southern European immigrants (Aroian & Norris, 2000; Aroian, Norris, Patsdaughter & Tran, 1998; Berry, Kim, Minde & Mok, 1987; Flaherty et al., 1988; Frye & D'Avanzo, 1994; Furnham & Sheikh, 1993; Hattar- Pollara & Meleis, 1995; Kim & Rew, 1994; Lipson, 1992; Lipson &Miller, 1994; Moghaddam, Ditto & Taylor, 1990, 1990; Moon & Pearl, 1991; Thompson, 1991; Vega, Kolody & Valle, 1987; Westermeyer, Vang & Neider, 1983).

Moreover these variables can be combined to give stronger predictions of mental health. Studies on resettlement consider occupational problems and lack of family as the major factors that influence the early period in the host country and lead to psychological disorders (mainly depression). One frequent statement, usually generalized from a single but exemplary longitudinal study by Beiser (1988), is that emotional distress is highest during initial resettlement (particularly the first few to 18 months).

Another position, usually credited to observations made of immigrant families by Sluzki

(1986), maintains that early resettlement (i.e., the first 6 months) is marked by a "honeymoon" period of euphoria, followed by distress that persists for a number of years. Although a number of studies have documented higher rates of distress among recent rather than longstanding immigrants (Beiser, 1988; Black et al., 1998; Cwikel, Abdelgani, Goldsmity, Quastel & Yevelson, 1997; Kim & Rew, 1994; Moon & Pearl, 1991; Pernice & Brook, 1996; Vega et al., 1987), a number of other studies have found that years since arrival is unrelated to distress (Hauff & Vaglum, 1995; Lipson, 1992; Locke, Southwick, McClosky & Fernandez-Esquer, 1996; Moghaddim et al., 1990; Pernice, Trlin, Henderson & North, 2000; Webster, Mc-Donald, Lewin & Carr, 1995).

More than half of the studies mentioned above used cross sectional data from study participants who were in the resettlement country for varying lengths of time to study the effects of time on psychological status. More recent studies of mental health and migration have been conducted among immigrants from less developed or developing countries in North America (Breslau et al., 2007; Huang, Wong, Ronzio, & Yu, 2007; Takeuchi et al., 2007) and West Europe (Bhugra & Minas, 2007; Huang & Spurgeon, 2006; Leavey, Rozmovits, Ryan & King, 2007; Lindert, Schouler-Ocak, Heinz, & Priebe, 2008; Robjant, Robbins, & Senior, 2009).

These studies generally indicate that international migration is a complex process during which external and internal stressors will influence immigrants' mental health resulting in significant adverse clinical outcomes. The focus has mostly been on understanding sociocultural and economic adjustment and occupational difficulties in association with the aetiology of mental disorders (Littlewood, 2006).

Leading disadvantaged, marginalized, and vulnerable lives in their new destination, migrant workers may be at a high risk of mental ill health. Roberts et al (2004) interviewed 1,728 American workers about aspects of their jobs, their exposure to racial discrimination at work, and dimensions of mental health. American minorities reported more discrimination at work than

White Americans and there was evidence of institutional discrimination against minorities. Those who reported that they had been discriminated against were found to have poorer mental health outcomes than their same-race counterparts who did not acknowledge being discriminated against.

A study conducted by Smith et al. (2005) on black Caribbean and Bangladesh workers in the UK showed significant associations between ethnicity and psychological distress and between particular work characteristics and psychological distress.

Some studies have suggested that working conditions, social security and medical benefits, education of migrant children, housing conditions, and discrimination by urban residents can be major stressors adversely affecting migrant workers' mental health (Wong, He, Leung, Lau, & Chang, 2008). The literature on the mental health of migrant factory workers from international studies suggests that depressive symptoms may be common among migrant workers. Gender differences in the mental health status in various populations have been observed (Seedat et al., 2009). Most research on migrant workers health fails to elucidate the relationship between the impact of economic factors, especially income levels, on mental illness. One study in Zhejiang Province showed an association between better mental health status (measured by SF-36 mental health scale) and higher salary (Li et al., 2007). Length of time at work and environmental factors of the host city have also been mentioned as determinants.

Migrant care workers are the most feminised occupation in the EU (Austria, France, Italy, the UK and Sweden for home helpers in elderly care, and Cyprus, Latvia, Iceland and Norway for childcare workers and pre-primary teachers) and the literature shows that for this kind of worker the effect of depression is very serious and due to segregation (Degiuli, 2007; Elrick & Lewandowska, 2008; Prodromos Panayiotopoulos, 2005; Ahonen, Lopez-Jacob et al., 2010; Doyle & Timonen, 2009; Williams, 2010).

In summary this category of reviewed studies focused on single associations between poor mental health and ethnicity and job characteristics. None of these 26 studies summarized in Table 2

referred to a transactional perspective nor took as framework of reference general models of stress that integrate all the aspects related to ethnicity dimensions with work-related dimensions. Most of these studies measured ethnicity as a descriptor of the migrant working population studied or as an objective category (i.e. nationality, country of birth, language, skin colour, origin and racial group) associated with occupational factors in the prediction of mental health. Some other studies showed the percentage of psychological symptoms for different workers varying in ethnicity using an epidemiological approach. In this group both ethnicity and occupational factors were oversimplified and considered only for the fact that the study samples consisted of migrant workers. Ethnicity and gender differences in mental health have also been observed in various working populations and there were a few papers that tried to investigate in depth the relationships between cultural dimensions and work characteristics including other aspects of ethnicity like racial discrimination and only the study conducted by Smith et al. (2005) showed a significant associations between occupational health, ethnicity and work characteristics (measured with Siegrist and Karasek' models variables). This study suggested that one should investigate aspects of ethnicity like cultural identity, acculturation.

2.5.3 Ethnic minorities and Work Stress

Certain areas, such as ethnicity and stress at work receive little coverage due to the dearth of data on the topic. Indeed, most authors state that in general the topic of ethnic minorities and work-related ill-health is an under researched area with most of the research coming from the USA. In terms of workplace stress, several US studies indicate that ethnic minorities experience a more negative work environment (especially in terms of discrimination and harassment) that can lead to increased stress. Studies clearly establish an association between work-stressors and a psychological (emotional) reaction (Jackson & Schuler, 1985; Netemeyer et al., 1990; Spector, 1998). Work related stressors, including demands for too much work in too little

time, irreconcilable conflicts, and unclear or unpredictable demands, are all socio- psychological stressors (Kahn, 1964; Netemeyer, Boles, & McMurrian, 1996), which can lead to psychosomatic health problems and depression (Jamal, 1999). The impacts of these role stressors seem to transcend all cultures. People from different races and ethnic backgrounds can identify the effects of these stressors within their own cultural context (Peterson et al., 1995). For example, work-related stressors correlate positively with intention to quit and negatively with job satisfaction (Lu et al., 1999). There are opposite effects in different cultural contexts. In developed countries, overload is negatively related to satisfaction, but it is viewed positively among workers in many under-developed countries because of over-time pay (Jamal, 1999). If over-time work yields increased income for factory-workers in China, then long work hours may not be an issue (Kurz, 2002; London et al., 2002; Milkie et al., 2004).

In spite of some differences, studies generally find that relationships between some stressors might still be consistent across national cultures. For example, studies across all cultures indicate that employed women are less depressed than unemployed women (Perry-Jenkins et al., 2000). Also, recent research implies that there have been major shifts in the demographic composition of the world's workforce, with an increase in older workers, women, and dual-earners in one family. Another significant trend is the growth in cultural diversity (Kandola & Fullerton, 1994).

One of the major problems with previous researches on ethnicity and occupational health is that it has failed to consider important issues such as discrimination and culture. In the Bristol study (Smith, 2000), 30% of ethnic minorities reported very high or extremely high levels of stress at work compared to 18% of the white workers. In another study conducted by Smith et al. (2005) the Bristol data were combined with a similar database collected in Cardiff area to investigate whether ethnic minorities reported greater levels of stress at work and to determine whether this applied to both South Asian and Black groups. The results showed that consideration must be given to how ethnicity affects workers and to the effects of racial discrimination on

performance and work stress.

A review of the occupational health and safety of ethnic minority groups in Britain has examined "whether certain minority ethnic groups are disproportionately affected by work-related health and safety outcomes, issues or activities" (Szczepura et al., 2004). Nazroo (2003) has reviewed evidence showing differences in health across ethnic groups. He suggests that social and economic inequalities, underpinned by racism, are fundamental causes of ethnic inequalities in health. A number of studies have also shown that racial discrimination is related to stress symptoms (Klonoff et al., 1999) and objective signs of disease (Troxel et al., 2003).

Several studies were also identified reporting that ethnic minorities experience more negative work environments in terms of social interactions on the job, such as criticism, bias, and sexual harassment which can lead to stress and stress related behaviors (such as alcohol and tobacco consumption). US research on gender and cultural diversity issues in worksite stress also indicated the need for stress management programs to enable women in general, and ethnic minority women specifically, to cope with their unique stressors (Walcott-McQuigg, 1994). Other studies examining the relationship between alcohol consumption, nature of work, and ethnicity have identified significant ethnic differences. Two US studies have examined workplace transport. One paper reports that heavy alcohol consumption among urban transit operators is related to several variables including age, ethnicity, gender and marital status (Ragland et al., 1995). A further study of urban transit operators has highlighted an association between workplace racial discrimination and some measures of alcohol consumption (Yen et al., 1999). A US study of mostly male employees in manufacturing found that problems in the workplace are associated with work-related drinking; these workplace problems were found to be related to age, gender, ethnicity, work shift and departments (Ames, Grube & Moore, 1997). A further US paper reviewing published research related to women, alcohol and work emphasizes the importance of interactions among ethnicity, class, employment, and alcohol

consumption (Ames & Rebhun, 1996). These results confirm the need for the development of occupational stress and health models than are cross-culturally applicable.

The next part of this chapter describes in more detail all the aspects of occupational health, safety and well-being related to the dimension of ethnicity before introducing to the rationale of the research and the preliminary data analyses reported in Chapter 3.

2.6 A lack of development in the literature: the Role of Culture

As stated in the previous sections, one of the problems of the studies reported is that they have not considered the complex nature of the term ethnicity and the relationships with other cultural dimensions like acculturation, discrimination and ethnic identity.

Ethnicity and culture represent a novel topic because there has been little consideration of them in studies of work stress. Measures of work characteristics and/or work stress have been developed especially within single ethnic group datasets and there are only a few studies that investigate in depth the relationships between cultural dimensions and work characteristics (Smith et al., 2005).

Before investigating in our sample the relationships between ethnicity and psychophysical health and appraisal (job stress/satisfaction) it is important to understand the meaning of this variable and the related concepts like acculturation, ethnic identity and discrimination.

Berry (1989) elucidated four characteristics of acculturation:

• Integrated individuals: Individuals who want to maintain their identity with home culture, but also want to take on some characteristics of the new culture

• Assimilated individuals: These people do not want to keep their identity from their home culture, but would rather take on all of the characteristics of the new culture

• Separated individuals: They want to separate themselves from the dominant culture. This can

be called segregation or, if it is forced, separation

• Marginalized individuals: These individuals do not want anything to do with either the new culture or the old culture.

Berry (1989) explains that this phenomenon can be described as a multi- linear process, as it can have different goals and can lead to different outcomes. Moreover, the author explains that changes of behavior may occur as a result of acculturation. In the literature, one can find a distinction between two types of effects: the first is connected to so-called "displacement behavior", characterized by a quantitative change and the second refers to new phenomena that accompany acculturation, which appear to result from conflicts and psychological and social disruptions.

These include an increase in murders or rapes, and the declining state of mental health produced by this type of stress is called acculturation.

Jean S. Phinney proposed a three stage model of ethnic identity development (1992). The first stage, "Unexamined Ethnic Identity", is characterized by a lack of exploration. In this stage, individuals may experience diffusion or foreclosure, a lack of interest in ethnicity or a general acceptance of others opinions.

The second stage of the model, "Ethnic Identity Search/ Moratorium", combines the notions of encounter and exploration. The individual starts to develop their ethnic identity during this stage which is often initiated by a harsh or indirect event.

The final stage of the model is "Ethnic Identity Achievement". Individuals at this stage have a clear sense of their ethnic identity and are able to successfully navigate their bicultural identity.

Cultural or ethnic identity describes a process and outcome for a person's sense of 'who they are' and 'how they might be perceived' by others in their living and working environment.

As the terms culture and ethnicity have many definitions drawn from disciplines such as anthropology, psychology and sociology, it is generally agreed that the construct is multi-faceted and interconnected and this presents researchers with a difficult challenge.

For this reason in the stress area it could be important to consider each aspect of the ethnicity dimension in order to give evidence to this important variable in the workplace and in the promotion of wellbeing at work. Ethnicity seems to be a variable "in between" that could be considered not only a descriptor but also an individual difference or a potential source of stress and it could be independent from work characteristics in predicting outcomes or could exacerbate the effects of work characteristics.

2.7 Conclusion and implication for the present study

Ethnicity and stress at work have received little coverage and one of the major problems with the limited previous research on ethnicity and occupational health is that it has failed to consider important issues related to cultural dimensions such as acculturation strategy, cultural identity and perceived discrimination and their potential role in a transactional model of stress.

In accordance with this issue, the reported systematic review showed that none of the 60 studies summarized used a transactional perspective and took as framework of reference general models of stress that integrate all the aspects related to ethnicity with work-related dimensions. Moreover most of these studies 51 (85%) reported ethnicity as a descriptor and objective category (i.e. nationality, country of birth, origin, racial group) and only a few papers (n=8, 13%) add discrimination as an experienced episode and none conceptualise it as the perception or feeling of being discriminated against. Only one study (Smtih et al., 2005) integrates ethnicity with perceived racial discrimination and this study suggested detailed consideration of other aspects such as cultural identity, acculturation. This study from our critical review leads to our suggestion for a proposed of model for future research on ethnicity and occupational stress.

It is argued that ethnicity should be considered not only as an objective category but also as an individual difference or a potential source of pressure in the work stress models. Therefore in the stress area each aspect of the ethnicity dimension can be relevant and needs to be considered to

understand the possible role of the culture in work-related stress research and to develop and test a general model that integrates a transactional model of stress with the different cultural dimensions. On the basis of the previous research on ethnicity and occupational health in migrant workers, the gap in the literature on cultural dimensions and stress at work and the debate on the role of culture in the work stress models, a transactional model of stress which simultaneously compared a number of job characteristics, individual differences, ethnicity dimensions and appraisals in the prediction of psychophysical health conditions in migrant workers will be proposed and tested in the next chapters. The Demand-Resources-Individual effects model was considered as a framework of reference for our proposed model. In parallel with this type of approach it is essential to consider different conceptualisations of ethnicity and culture, and the interplay of mixed and single cultural work environments. Therefore the next chapter will describe the potential problems of ethnicity and occupational health and it will investigate the main effects of ethnicity dimensions on psychological disorders and physical diseases in a sample of migrant workers in South Italy. The preliminary analyses of data are described and the methodological issues involved require different types of statistical analyses which are also described.

Chapter 3: Ethnicity and Health Outcomes

3.1 Introduction

The definition of the terms "ethnicity" and "culture" and the problems of measuring ethnicity have been described in the previous chapter. This chapter describes the potential significance of ethnicity in relation to occupational health and investigates the main effects of ethnicity variables on psychophysical health in a sample of migrant workers in South Italy.

Finally these preliminary results confirmed significant associations of cultural dimensions with health outcomes and they introduce Chapter 4 where the main effects of ethnicity on job stress/satisfaction (appraisals) and work characteristics will be evaluated. These preliminary results will helpful to have a map of associations before analysing the proposed general model.

3.2 Potential problems of not considering ethnicity: Preliminary hypotheses

As reported in the previous chapter, there has been little consideration of ethnicity in studies of stress and measures of work characteristics, work stress and psychological distress have been developed within (predominantly) single ethnic group datasets. In addition, single methodologies have often been used and there is a need to address the topic using both quantitative and qualitative approaches.

In addition to the problem of measuring and conceptualizing of ethnicity (see chapter 2), another issue related to ethnicity studies is the selection of the sample. In each country ethnic minorities are different in origin, density of population, range of occupation, levels of education, language capacities and family conditions and so on. For these reasons it could be relevant to begin with a pilot study to identify and recruit ethnic minority groups, to decide the measurement of aspects of ethnicity and to select the criteria of sampling.

The purpose of this study is to investigate all the aspects of ethnicity and the relationships with reported occupational stress, psychological disorders and physical diseases in migrant workers and Italian counterparts.

Therefore on the basis of the previous research on ethnicity and occupational health, the gap in the literature on cultural dimensions and stress at work and the difficulties described by the migrants during the period of volunteering in the communities, the initial core hypotheses addressed in the present project were:

1. There will be associations between Ethnicity and Health outcomes.

2. Groups, who had experienced racial discrimination, will be correspondingly more likely to suffer negative health outcomes.

3. There will be significant different profiles of associations between Ethnicity dimensions and Health outcomes in each ethnic group.

These hypotheses were helpful to get a draft of how specific cultural aspects lead to negative psychophysical health conditions before looking at them in the general model.

3.3.1 Sample

For this project, multistage sampling was used in the selection of the study sample on the basis of largest ethnic communities around Naples and Caserta, being in paid work, regular employment, aged between 25-45 years and language capacities.

Looking in more detail at these inclusion criteria, in South Italy the largest ethnic minorities are Eastern European (48.7%), North African (19.7%), Black African (13.9%) and more than half (70%) live in Campania around the biggest cities of Naples and Caserta (see Chapter 2). In particular in this area there were a huge presence of Eastern Europeans, Moroccans and Ghanaians and they were supported by associations that gave me the opportunity to work as

volunteer and where I recruited the migrant sample.

The regular employment status of these ethnic groups was in accordance with my interest in migrant working population. Moreover the following aspects in the migrant population such as school education, genetic predispositions and body structure, behavioural patterns and previous working experience facilitated the access of each ethnic group to specific occupational sectors and for this reason it was possible to restrict the sample to specific job type in each ethnic group and to compare them with Italian counterparts.

In fact the Eastern Europeans were all women who worked full-time as care workers for the elderly and all of them had qualifications as nurses or care assistants got in their home country. There were not Italian counterparts of these workers because these jobs are almost exclusively filled by these women. Most of the Moroccans were men who worked part-time as factory workers in manufacturing industries and the Ghanaians were all men who worked as masons in the construction sector. Finally all of them were first generation of immigrants and they had the necessary language skills to complete the questionnaire.

Among the Italian counterparts, the factory workers were recruited in two manufacturing industries, while the masons in two construction industries in the same geographic area.

Therefore the sample of the study consisted of: Eastern European care workers (N=250), Moroccan factory workers (N=250), Ghanaian masons (N=200), Italian factory workers (N=100) and masons (N=100).

3.3.2 Procedure

After deciding on the ethnic minorities to be studied, I contacted the heads of the associations of immigrants which supported these ethnic groups and where I worked as volunteer and I invited them to participate in our study and agreed 2 times a week in each association to submit the questionnaire individually. Questionnaires lasted 50-60 minutes, and were conducted by two

psychologists familiar with this study and speaking English and French to cope with possible language difficulties of some participants.

Ethical approval was provided by University of Naples "Federico II" and informed consent was achieved within the questionnaire where participants could not continue beyond the consent page without agreeing.

Altogether 1061 participants were recruited between October 2012 and December 2014. A total of 900 of 1061 questionnaires distributed were returned and considered valid (response rate = 84.8%). Among the volunteers who did not complete the questionnaires, 71 had language difficulties, 90 were busy in other association's activities during the presence of the two interviewers and they completed less than half of the questionnaire.

3.4 Materials

This questionnaire consisted of six sections.

Section 1 included measures of the respondent's personal and biographical details (e.g., gender, age, education, marital status) and job characteristics (e.g., employment, type of contract, number of hours worked).

Section 2 measured individual characteristics; Coping Style Inventory (Cooper, Sloan,& Williams, 1988), Bortner's Type A Behavioural Style Inventory (Bortner, 1969), Type D Personality (Denollet, 2005).

Section 3 included measures of cultural dimensions; Phinney's Multigroup Ethnic Identity Measure (MEIM, 1992), Berry's measures of ethnic identity and acculturation (1997), and Racial discrimination (a single item of reported discrimination at work on the basis of race or ethnicity – Smith et al., 2000).

Section 4 measured work characteristics; Job Content Questionnaire (JCQ; Karasek, 1985), Effort-Reward Imbalance (ERI test; Siegrist, 1996).

Section 5 referred to psychophysical health; Symptom Checklist 90 R (SCL-90-R, Derogatis, 1994), a single item asking "Over the past 12 months, how would you say your general health has been?" (Smith et al., 2000).

Section 6 measured appraisals (perceived job satisfaction/stress); Job Satisfaction Scale (Warr, Cook & Wall, 1979), Single item asking "In general, how do you find your job?": those responding not at all, mildly and moderately stressful were compared with those responding very or extremely stressful (Smith et al., 2000).

In this preliminary part of the study the following measures were used:

Ethnicity (simple): the three self-reported ethnic minority groups studied were Eastern European, Moroccan and Ghanaian based on self-ascribed ethnicity.

Ethnicity (stratified): the whole sample of migrants was subdivided by both gender and racial discrimination in order to evaluate the influence of gender and discrimination in the prediction of the health outcomes.

Psychological distress: A symptom checklist 90 R (SCL-90-R) consisting of the following subscales**:** Anxiety, Depression, Somatization, Obsessive-Compulsive, Interpersonal sensitivity, Hostility, Phobic anxiety, Paranoid ideation and Psychoticism. Participants reported how much these problems has distressed them during the past 4 weeks and those responding extremely, quite a bit and moderately were compared with those responding a little bit or not at all.

General health: A single item asking "Over the past 12 months, how would you say your general health has been?": those responding excellent, very good and good were compared with those responding fair or poor.

Phinney's Multigroup Ethnic Identity Measure (MEIM)

Phinney (1992) developed the 14 -item, 4-point (1 = strongly disagree, 4=strongly agree) instrument to address, conceptually and methodologically, ethnic identity as a general phenomenon across groups. The components measured by the MEIM are: search of ethnic

identity (socializing with one's group members and participation in cultural traditions), affirmation, belonging and commitment (feelings of attachment to one's group, ethnic pride, attitudes toward one's group, understanding one's ethnicity, commitment and secure knowledge of who one is as a member of an ethnic group).Those responding strongly agree and disagree were compared with those responding strongly disagree or disagree.

Berry's measures of acculturation

Berry (1997) developed a bi-directional acculturation and ethnic identity model, drawing upon a two-dimensional acculturation strategy, i.e. ethnic cultural maintenance and contact with the dominant host group. Berry (1997) argues that his proposed framework should be used to identify acculturative stress amongst ethnic minority individuals by categorizing them into four distinct acculturation strategies: (1) integration (an equal interest in engaging with both their ethnic and dominant culture; (2) separation (retention of ethnic identity and rejection of dominant cultural identity); (3) assimilation (rejection of their ethnic minority culture in favour of accepting the dominant culture) and (4) marginalization (rejection of both their ethnic minority culture and the dominant culture). Participants reported their own acculturation strategy responding to two items asking "Is it considered to be of value to maintain cultural identity and characteristics?" and "Is it considered to be of value to maintain relationships with other groups?"

Racial discrimination at work: A single item measured reported racial discrimination at work on the basis of race or ethnicity. Those who had experienced racial discrimination at work were compared with those who did not report racial discrimination.

All of the measures used in the preliminary part of the study are summarised in two categories of variables designed as cultural dimensions (consisted of the subscales of Phinney's Multigroup Ethnic Identity Measure, the two items of Berry's Schema and the single item reported racial discrimination at work) and health outcomes (consisted of the subscales of the Symptom

Checklist 90 R and the single item reported general health). These two dimensions are also showed in table 3.1 below.

Table 3.1: Summary of dimensions and measures used in the preliminary part of the study

Cultural dimensions	Ethnic group Phinney's Multigroup Ethnic Identity Measure (MEIM, 1992), Berry's Schema (1997), Racial discrimination (single item reported discrimination on the basis of race or ethnicity)
Health outcomes	SYMPTOM CHECKLIST 90 R (SCL-90-R, Derogatis, 1994), Single item asking "Over the past 12 months, how would you say your general health has been?"

3.5 Data Analyses

The following statistical analyses were carried out using SPSS-X:

a) Pearson Correlations between the subscales for each dimension (Cultural dimensions, Health outcomes, see table 3.1 above);

b) Factor Analyses (Principal component analysis, Method: Varimax, communalities > .35, parallel analyses, scree test, eigenvalue > 1, item factor loadings > .30) of all the subscales for each dimension (Cultural dimensions, Health outcomes);

c) Pearson Correlations between factor scores extracted;

d) Descriptive statistics (Frequencies and Percentages) of gender, age, ethnicity, education, type of job, work status, type of contract;

e) Univariable association between ethnicity and Health outcomes (Logistic regression analysis, Method: Enter, First indicator contrast);

f) Multivariable associations between ethnicity dimensions and Health outcomes (Logistic regression analysis, Method: Enter, First indicator contrast);

g) Multivariable association between the health outcomes, gender and racial discrimination in ethnic minorities (Logistic regression analysis, Method: Enter, First indicator contrast);

h) Multivariable associations between Cultural dimensions in the form of Acculturation strategies, Perceived discrimination, Ethnic identity and Health outcomes for each ethnic group (Logistic regression analysis, Method: Forward LR, First indicator contrast). Forward LR method was used to reduce the large number of explanatory variables and focus directly on the significant. Removal is based on the likelihood ratio.

3.6. Preliminary Statistical Analyses. Selection of the factors

Correlations between subscales for each dimension were run to check the significant associations before the Principal component analyses (see Appendix 3.1).

Then PCA of the subscales for each dimension (overall sample) reduced the huge numbers of variables. Tables 3.2, 3.3 below show the components extracted for each dimension.

Table 3 . 2: Factor analysis of cultural dimensions: Loadings and variance explained

	Components		
	1	2	3
Affirmation, Belonging, Commitment	**.887**	.058	.317
Maintenance Culture	**.833**	.286	.392
Search Ethnic Identity	.078	**.862**	.371
Adoption host culture	.344	**.665**	.280
Perceived racial discrimination	.335	.486	**.952**
% Variance explained	45.574	26.271	16.271
Eigenvalue	1.823	1.351	1.123

The final 5 subscales gave a scale with three distinct components which could be designated: Affirmation/Maintenance culture, Search identity /Adoption host culture, Perceived racial discrimination.

Table 3.3: Factor analysis of SCL 90-R dimensions and general health: Loadings and variance explained

	Components		
	1	2	3
Interpersonal Sensitivity	**.783**	.014	.008
Paranoid Ideation	**.695**	-.136	.118
Obsessive-Compulsive	**.459**	.422	.275
Hostility	**.355**	.127	.180
Depression	.037	**.714**	.364
Somatization	-.365	**.658**	.471
Anxiety	.324	**.639**	.321
General health	.175	.396	**.812**
% Variance explained	25.360	20.862	13.521
Eigenvalue	1.775	1.460	1.141

The final 8 subscales gave a scale with three distinct components which could be designated: Relational disorders, Anxious-Depressive disorders and General health. Two subscales of Psychoticism and Phobic anxiety were excluded because there weren't any of these symptoms in the overall sample.

Summary of factors extracted

Ethnic group Affirmation/Maintenance culture, Search identity /Adoption host culture, Perceived racial discrimination	Cultural dimensions
Relational disorders, Anxious-Depressive disorders, General health	Health outcomes

These factors extracted (as all the factors of this study) for the overall sample were correlated with the factors extracted for each ethnic group and they showed high correlations level between them. For this reason we decided to use the components extracted for the sample as a whole also for each individual group to achieve more coherence in terms of testing the model and its application using the same factors (see appendix 3.2).

Finally, correlations between factors scores were run to get a profile of the significant associations of the new variables.

Before running the analyses, the table below shows a summary of the factors extracted for this part of the study split at the median into low and high groups, in three categories for the acculturation dimensions and racial discrimination taking into account the recoding of these cultural variables due to the presence of the missing values corresponding to the Italian sample (they did not complete the part of the questionnaire related to ethnicity), in five categories for the Nationality/jobs variables taking into account the ethnic groups and the types of job and in two categories for ethnicity as Italian and not Italian. Moreover about the racial discrimination at work it is important clarify that participants who did not report racial discrimination consisted of almost all the Eastern Europeans (these workers live with their employer) compared with participants who reported racial discrimination (N=432, 61.7%, almost all the Ghanaians and Moroccans and a small part of the Eastern Europeans).

Table 3.4.Summary of all the factors extracted used in the next analyses

		Parameter coding	N	Recode
Nationality and job type	Nationality/Jobs	Italian masons=1	100	
		Eastern European care workers=2	250	
		Moroccan factory workers=3	250	
		Ghanaian masons=4	200	
		Italian factory workers=5	100	
Ethnicity	Italian/Not Italian	Italian=1	200	
		Not Italian=2	700	
Cultural dimensions	Perceived racial discrimination at work	Missing	200	Missing=1(Italians)
		Not Reported=1	268	1=2 Not reported
		Reported=2	432	2=3 Reported
	Affirmation/Maintenance culture	Missing	200	Missing=1 (Italians)
		Low=1	350	1=2 Low
		High=2	346	2=3 High
	Search Identity/Adoption of the host culture	Missing	200	Missing=1 (Italians)
		Low=1	351	1=2 Low
		High=2	345	2=3 High
Psychophysical health	Anxious-Depressive disorders	Low=1	448	
		High=2	449	
	Relational disorders	Low=1	449	
		High=2	448	
	General Health	Low=1	512	
		High=2	367	

3.7 Results

3.7.1 Descriptive Statistics

Tables 3.5, 3.6, 3.7 below show the descriptive statistics for gender, age, ethnicity, education, type of job, work status, type of contract for each ethnic group.

Table 3.5: Descriptive statistics of Eastern European care workers (Age Mean= 43.18; SD= 4.25)

Descriptives	N	%
Gender		
Female	250	100
Marital Status		
Married	237	94.8
Unmarried	13	5.2
Education		
Middle School	4	1.6
High School	236	94.4
Degree	10	4.0
Work Status		
Part-time	17	6.8
Full-time	233	93.2
Contract type		
Fixed term contract	243	97.2
Temporary/casual	7	2.8

The Eastern European workers were women, married with a high level of education. All worked as care workers, full-time, with fixed contracts and they earned around 800 euros/month.

Table 3.6: Descriptive statistics of Moroccan factory workers (Age Mean= 40.78; SD= 3.51)

Descriptives	N	%
Gender		
Female	25	10
Male	225	90
Marital Status		
Married	231	83.2
Unmarried	19	16.8
Education		
Middle School	143	57.2
High School	107	42.8
Work Status		
Part-time	3	1.2
Full-time	247	98.8
Contract type		
Fixed term contract	85	34.1
Temporary/casual	165	65.9

Most of the Moroccan workers were men, married with a medium level of education. All worked as factory workers, full-time, with temporary contracts and they earned around 600 euros/month.

Table 3.7: Descriptive statistics of Ghanaian masons (Age Mean= 38.78; SD= 4.32)

Descriptives	N	%
Gender		
Male	200	100
Marital Status		
Married	200	100
Education		
Middle School	190	95
High School	10	5
Work Status		
Part-time	200	100
Contract type		
Fixed term contract	4	2
Temporary/casual	196	98

The Ghanaian workers were men, married with a medium level of education. All worked as factory masons, part-time, with temporary contracts and they earned around 400 euros/month.

Table 3.8: Descriptive statistics of Italian factory workers (Age Mean= 42.78; SD=4.34)

Descriptives	N	%
Gender		
Male	100	100
Marital Status		
Married	92	92
unmarried	8	8
Education		
Middle School	7	7
High School	93	93
Work Status		
Full-time	100	100
Contract type		
Fixed term contract	19	19
Permanent contract	81	81

All the Italian factory workers were men; most of them were married with a high level of education. All worked as factory workers, full-time and most of them had permanent contracts and they earned around 1200 euros/month.

Table 3.9: Descriptive statistics of Italian masons (Age Mean= 40.61; SD= 3.38)

Descriptives	N	%
Gender		
Male	100	100
Marital Status		
Married	100	100
Education		
Primary School	12	12
Middle School	83	83
High School	5	5
Work Status		
Part-time	99	99
Full-time	1	1
Contract type		
Fixed term contract	83	83
Temporary/casual	17	17

All the Italian workers were men and married and most of them had a medium level of education. All worked as masons, part-time, with fixed term contracts and they earned around 800 euros/month.

It is interesting to underline that the Italian workers were older than their migrant counterparts and that gender and ethnic group variables were strictly related to job type.

3.7.2 Ethnic group and Ethnicity dimensions on health outcomes

In accordance with hypothesis one (see section 3.2), logistic regression analyses (see tables 3.10, 3.11, 3.12, 3.13 below) show the associations between the ethnicity variables, ethnic group and psychophysical outcomes.

Multivariable associations between the health outcomes and ethnicity variables were carried out for the whole sample (see table 3.8 below). In this model we give closer attention to how all the ethnicity dimensions were associated with health outcomes before looking at in the general model. Differences between gender and job type will be evaluated in more detail later in the application of the proposed model in each ethnic group.

Table 3.10: Multivariable associations of Ethnicity dimensions with Health outcomes (p<.05, N=900)

	Relational disorders		Anxious-Depressive Disorders		General Health	
	OR	C.I.	OR	C.I.	OR	C.I.
Ethnicity						
Italian	1.00		1.00		1.00	
Not Italian	1.647	1.018-3.026	1.922	1.516-3.757	.336	.229-.694
Affirmation/Maintenance Culture						
Low	1.00				1.00	
High	1.766	1.032-3.117	n.s.	n.s.	.457	.277-.836
Search Identity/Adoption host culture						
Low			1.00		1.00	
High	n.s.	n.s.	1.605	1.009-2.972	.415	.253-.836
Racial Discrimination at work						
Low	1.00		1.00		1.00	
High	2.015	1.022-4.073	2.440	1.362-4.353	1.763	1.043-3.049

Table 3 . 10 shows that the group of migrant workers (Ethnicity not Italian) may be more likely to suffer Relational disorders, Anxious-depressive disorders and less likely to suffer poor general health. Moreover the group of migrant workers with high recourse to Affirmation/Maintenance culture were more likely to report Relational disorders and less likely to report physical problems and the workers with high recourse to Search Identity/Adoption of host culture were more likely to report Anxious-depressive disorders and less likely to report poor general health.

Finally, data show the associations of perceived racial discrimination with higher likelihood to report poor psychophysical health conditions. Therefore Relational disorders and Anxious-depressive disorders are more common in migrant workers and racial discrimination at work may be associated with high risk of reporting psychophysical problems and many difficulties in terms of integration (descriptives about racial discrimination at work and health outcomes are reported in more detail in chapter 6 on proposed Ethnicity and work related stress model).

Moreover, univariable associations between the health outcomes and ethnic group in terms of nationality were carried out for the whole sample (see tables 3.11, 3.12, 3.13 below).

Table 3.11: Univariable association between Anxious-Depressive disorders and ethnic group

| | OR | 95 % C.I. | |
		Lower	Upper
Italian	1.00		
Eastern European	2.198	1.316	5.147
Moroccan	.425	.290	.624
Ghanaian	.304	.199	.463

Table 3.12: Univariable association between Relational disorders and ethnic group

	OR	95 % C.I.	
		Lower	Upper
Italian	1.00		
Eastern European	.152	.097	.240
Moroccan	3.431	2.275	5.175
Ghanaian	1.199	.809	1.778

Table 3.13: Univariable association between general health and ethnic group

	OR	95 % C.I.	
		Lower	Upper
Italian	1.00		
Eastern European	.495	.333	.735
Moroccan	.175	.116	.263
Ghanaian	.109	.069	.172

Data showed that the Eastern European group were more likely to suffer Anxious-Depressive disorders (see table 3.11), while Moroccan and Ghanaian groups were more likely to suffer Relational disorders (see table 3.12). In addition, odds ratios are < 1 in each ethnic group for general health (see table 3.13) and showing lower risk of reporting poor general health. However, also these models do not take into account the influence of any other factors such as gender and job type that will be evaluated in more detail later in the applications of the proposed model of ethnicity and work-related stress.

Nevertheless looking at the above descriptive analyses it may be possible that this data reflect the influence of the age on the general health and the higher likelihood to report poor health conditions for the Italian groups.

With respect to acculturation strategies, the next sections will show in more details the specific strategies of each ethnic group.

3.7.3 Ethnic minorities: Gender, Racial discrimination and Health outcomes

Considering hypothesis two (see section 3.2) tables 3.14 and 3.15 below show the associations

between the health outcomes, gender and racial discrimination in ethnic minorities.

Table 3.14: Association between Anxious-Depressive disorders, Gender and Racial discrimination (df=3, p<.05)

	OR	95,0% C.I.	
		Lower	Upper
Male no discrimination	1.000		
Female no discrimination	1.008	.669	1.517
Female discrimination	1.255	.620	2.456
Male discrimination	6.562	4.035	10.674

Table 3.15: Association between General Health, Gender and Racial discrimination (df=3, p<.05)

	OR	95,0% C.I.	
		Lower	Upper
Male no discrimination	1.000		
Female no discrimination	.815	.523	1.268
Male discrimination	2.762	1.756	4.345
Female discrimination	1.455	.713	2.869

In accordance with Smith et al. 2005, the present data show that in ethnic minorities gender and racial discrimination have a powerful influence on health outcomes (see tables 3.14 and 3.15). In addition, the data point to migrant males who have experienced racial discrimination as being most likely to report Anxious-Depressive disorders and poorer general health. There were no significant associations between these sub-groups and Relational disorders.

3.7.4 Cultural dimensions and psychological distress

In accordance with hypothesis three about the associations between Cultural dimensions and Health outcomes in each group, logistic regression analyses were carried out to explore the influence of Acculturation, Ethnic identity and Perceived discrimination on the Psychophysical health of the migrant workers (see tables 3.16, 3.17, 3.18, 3.19 below).

Tables 3.16: Multivariable associations of Ethnicity Dimensions with General Health

Variables	OR	CI
Eastern European		
Affirmation/Maintenance Culture (p<.05)		
Low	1.00	.
High	.465	243-.890

For the Eastern European group, data show the association between Affirmation/Maintenance culture (i.e. interest in engaging with their ethnic culture) and lower risk of poor health.

Table 3.17: Multivariable associations of Ethnicity Dimensions with Relational disorders

Variables	OR	CI
Moroccan		
Search Identity/Adoption host culture (p<.05)		
Low	1.00	
High	1.786	1.043-3.058
Perceived Discrimination (p<.001)		
Low	1.00	
High	2.181	1.152-4.130

Among Moroccans, Search Identity/Adoption host culture and Perceived discrimination were associated with Relational disorders. Adoption of the host culture for this ethnic group could be considered a strong break from their origins and their family traditions.

Table 3.18: Multivariable associations of Ethnicity Dimensions with Anxious- Depressive disorder

Variables	OR	CI
Ghanaian		
Perceived Discrimination (p<.001)		
Low	1.00	
High	3.796	1.983-7.269

Table 3.19: Multivariable associations of, Ethnicity Dimensions with general health

Variables	OR	CI
Ghanaian		
Search Identity/Adoption host culture (p<.05)		
Low	1.00	
High	.227	.097-.535

Finally, the group of Ghanaian workers who had experienced Perceived discrimination were more likely to suffer Anxious-Depressive disorders (see table 3.18 above), while the group of Ghanaian workers with high recourse to Search identity/Adoption host culture were less likely to suffer Physical diseases (see table 3.19 above). Adoption of the host culture could be considered a behavioral pattern useful to the integration with dominant culture during the period of resettlement that reduces the risk of marginalization.

3.8 Summary of ethnicity dimensions and discussion

Findings from this preliminary part of the study give an indication of the main effects of the ethnicity dimensions on occupational health. The complex nature of this variable has been explained and the analyses considered all the aspects related to culture and ethnicity: Acculturation, Perceived discrimination and Ethnic Identity. The results of the analyses confirmed the importance of giving more attention to this dimension and they suggested that ethnicity is not only a descriptor of the population studied but it seems to be a variable that could be considered as an individual difference. Moreover if we considered migrant workers in hostile environment or workplace this combination makes ethnicity as a potential stressor. It suggests how cultural dimensions are dependent from the context and this influence the feeling with the own culture and the necessity of recurring to specific acculturation strategies to take a position in the host country.

In accordance with the three hypotheses of these preliminary analyses we can summarize the findings as follows:

Hypothesis 1: The Eastern European group may have more risk of Anxious- Depressive disorders, while Moroccan and Ghanaian groups report Relational disorders. Therefore Relational disorders, Anxious- depressive disorders are more common in migrant workers and

perceived discrimination could predict the high risk of psychophysical problems and many difficulties in terms of integration. This is something commonly found in the literature, with studies finding that migrant workers tend to report higher prevalence of psychological disorders during the period of resettlement in the host country (Madianos, Economou, Alexiou, Stefanis, 2011, Liwowsky, Kramer, Mergl, et al., 2009, Classen, Dunn, 2012, Comino, Harris, Silove, Manicavasagar, Harris, 2000). In addition the acculturation/ethnic identity variables depend on ethnic group and are shown in more detail in hypothesis three.

Hypothesis 2: Racial discrimination, particularly in combination with gender and ethnicity, had a powerful influence on health outcomes (in accordance with Smith et al., 2005) and male discrimination seemed to be more associated with Physical diseases and Anxious-Depressive disorders.

Hypothesis 3: Each ethnic group had different profiles of associations between Cultural dimensions and Health outcomes and it seems that Adoption of the host culture reduces the risk of health problems in Ghanaian workers but not in Moroccans. Perceived discrimination increases the risk of poor health in Moroccans and Ghanaians but this was not significantly reported by the Eastern European workers because their working conditions involve isolation and segregation. In addition, for these women an acculturation strategy of maintaining own culture seems to be helpful in reducing the risk of poor health.

3.9 Summary

In order to confirm that ethnicity is not only a descriptor of the population studied the main effects of the ethnicity variables on psychophysical health were investigated. All the aspects of ethnicity (such as acculturation, perceived discrimination and ethnic identity) were considered in these associations and the results of the analyses confirmed the importance of giving more attention to this dimension. In order to explore this further, the next chapter considers the main

effects of ethnicity on job stress/satisfaction (appraisals) and work characteristics before proposing a model of research that integrates ethnicity and work- related aspects (such as work characteristics, individual differences, perceived job stress/satisfaction and occupational health) in a transactional perspective.

Chapter 4: Ethnicity, Work Characteristics and Job satisfaction/stress

4.1 Introduction

The previous chapter described the main effects of the cultural dimensions on psychophysical health. This chapter will examine the relationships between the ethnicity variables and job satisfaction/stress (appraisals) in different ethnic groups considering each aspect of ethnicity in the form of descriptor, acculturation strategies, ethnic identity and perceived discrimination.

In particular this part of the study aims to investigate the main effects of ethnicity and its associations with perceived job satisfaction/stress (appraisals) and job characteristics.

The methodology involved different types of statistical analyses to select the relevant factors and the findings from this part of the study were designed to be added to the previous chapter's results to produce a profile of associations between the ethnicity dimensions and appraisals and the stress process.

It was important to focus on these associations before evaluating models of stress (including individual differences, work characteristics, cultural dimensions, appraisals and health outcomes) in the overall sample and each in ethnic group (Eastern European, Moroccan and Ghanaian workers).

Finally the main and interaction effects of work characteristics and cultural dimensions on health outcomes and appraisals introduce chapter 5 where the major theoretical models of stress and work related stress are described. This allows the ethnicity dimensions to be integrated with this specific research area and suggests a model of stress with a transactional perspective.

4.2 Ethnicity, Work characteristics and Job satisfaction/stress: hypotheses

As reported in chapter two, there has been little consideration of ethnicity in studies of stress and measures of work characteristics, work stress, psychological distress have been developed within single ethnic group datasets.

In accordance with this gap in the literature, this part of the study tries to investigate all the aspects of ethnicity and the associations with work characteristics and job satisfaction/stress (appraisals) in migrant workers in order to focus on the potential main effects of ethnicity and to give it a possible role in work related stress research.

The core hypotheses addressed in this part of the study were:

1) There are associations between the ethnicity dimensions and appraisals (perceived job satisfaction/stress).

2) Groups who had experienced racial discrimination were correspondingly more likely to perceive job stress and to feel dissatisfied.

3) There were significantly different profiles of associations between the ethnicity dimensions and work characteristics, perceived job satisfaction and job stress in each ethnic group.

4) There were significant associations of the ethnicity dimensions and work characteristics with health outcomes and appraisals.

4.3 Sample and Materials

Sample and Materials have been shown in the previous chapter (see sections 3.3 and 3.4).

In this part of the study the following measures, which have been described already, were used: Ethnicity (simple); Ethnicity (stratified); Psychological distress; General health; Phinney's Multigroup Ethnic Identity Measure (MEIM); Berry's measures of acculturation; and Racial discrimination.

In addition the measures reported below were considered:

Work stress: A single item asking "In general, how do you find your job?": those responding not at all, mildly and moderately stressful were compared with those responding very or extremely stressful.

The Job Satisfaction Scale (Warr, et al., 1979) is used to measure job satisfaction. This scale consists of 15 items, measured on a seven-point Likert-type rating scale for each item, assessing job satisfaction with anchors 1: Extremely dissatisfied and 7: Extremely satisfied.

Effort reward imbalance model (Siegrist) work characteristics

Extrinsic effort: Situational factors which make work more demanding.

Intrinsic effort: Personal factors (such as motivation and commitment to work).

Reward: Pay, status and opportunities for advancement.

Overcommitment: motivational pattern.

Job demand-control model (Karasek) work characteristics

Job demand: Pace and intensity of work.

Control: Amount of control the worker has over work and the skill and variety involved.

Total support: Support from colleagues and superiors.

For this part of the study we summarized all the measures shown above in 4 dimensions considering the characteristics of the variables (see table 4.1 below).

Table 4.1: Summary of measures used in this part of the study

Cultural dimensions	Ethnic group Phinney's Multigroup Ethnic Identity Measure (MEIM, 1992), Berry's Schema (1997), Racial discrimination (single factor reporting discrimination on the basis of race or ethnicity)
Work characteristics	JOB CONTENT QUESTIONNAIRE (JCQ; Karasek, 1985), ERI TEST (Siegrist, 1996)
Health outcomes	SYMPTOM CHECKLIST 90 R (SCL-90-R, Derogatis, 1994), Single item asking "Over the past 12 months, how would you say your general health has been?"
Appraisals (Perceived job stress, Perceived job Satisfaction)	Perceived job stress (single item asking "In general, how do you find your job?"), Job Satisfaction Scale (Warr, Cook & Wall, 1979)

4.4 Data Analyses

The following statistical analyses were carried out using SPSS-X (for Pearson correlations and Factor analyses of Cultural dimensions and Health outcomes see chapter 3 section 3.6):

a)   Pearson Correlations between the subscales for each dimension (Work characteristics and Appraisals see table 4.1 above);

b)   Factor Analyses (Principal component analysis, Method: varimax, communalities > .35, parallel analyses, scree test, eigenvalue > 1, item factor loadings > .30) of all the subscales for each dimension (Work characteristics and Appraisals);

c)   Pearson Correlations between factor scores extracted;

d)   Multivariable associations between Ethnicity dimensions and dependent variables (Appraisals) for the overall sample (Logistic regression analysis, Method: Enter, First indicator contrast);

e)   Multivariable association between the appraisals, gender and racial discrimination in ethnic minorities (Logistic regression analysis, Method: Enter, First indicator contrast);

f)   Multivariable associations between Cultural dimensions (in the form of Acculturation strategies, Perceived discrimination, Ethnic identity) and Work characteristics, perceived job satisfaction/stress for each ethnic group (Logistic regression analysis, Method: Forward LR, First indicator contrast);

g)   Univariable associations of independent variables (Work demands and perceived discrimination as "fixed factors") and control variables (job characteristics and ethnicity dimensions as covariates) with Health outcomes and appraisals (dependent variables) for the whole sample (General linear model, Analysis of Variance and Covariance, ANCOVA).

4.5. Preliminary Statistical Analyses. Selection of the factors

Correlations between subscales for each dimension (Work characteristics and Appraisals) were run to check the significant associations before the Principal component analyses (see Appendix 4.1).

Then PCA of the subscales for each dimension provided to reduce the huge numbers of variables. Tables 4.2, 4.3 below show the components extracted for each dimension.

Table 4.2: Factor analysis of ERI and DCS dimensions: Loadings and variance explained

	Components		
	1	2	3
Esteem Reward	**.831**	.012	.098
Job Security Prospects rewards	**.714**	.234	-.129
Overcommitment	.205	**.815**	.068
Effort	.434	**.730**	.048
Job Demands	.179	**.579**	-.096
Social Support	.329	-.206	**.771**
Job Control	.323	-.172	**.756**
% Variance explained	27.273	18.834	17.251
Eigenvalue	1.909	1.318	1.208

The final 7 subscales gave a scale with three distinct components which could be designated:

Intrinsic/Extrinsic rewards, Work demands and Work resources.

Table 4.3: Factor analysis of appraisals (perceived job satisfaction aspects and perceived job stress): Loadings and variance explained

	Components	
	1	2
Intrinsic and job itself satisfaction	**.864**	.207
Working conditions satisfaction	**.797**	.229
Extrinsic job satisfaction	**721**	.150
Employee relations satisfaction	**.607**	.189
Perceived work stress	.135	**-.986**
% Variance explained	49.68	23.45
Eigenvalue	1.99	1.23

The final 5 subscales gave a scale with two components of job satisfaction and job stress

which could be designated: Total job satisfaction and Perceived work stress.

Summary of factors extracted

Intrinsic/Extrinsic rewards, Work demands, Work resources	Work characteristics
Total Job satisfaction Perceived Work stress	Appraisals

Finally, correlations between factors scores were run to get a map of the significant associations of the new variables. Before analysing the results, the table below shows these new factors extracted added to the ones reported in the previous chapter and split at the median into low and high groups.

Summary of all the factors extracted used in the next analyses

		Parameter coding	N	Recode
Nationality and job type	Nationality/Jobs	Italian masons=1	100	
		Eastern European care workers=2	250	
		Moroccan factory workers=3	250	
		Ghanaian masons=4	200	
		Italian factory workers=5	100	
Ethnicity	Italian/Not Italian	Italian=1	200	
		Not Italian=2	700	
Work characteristics	**Work demands**	**Low=1**	**448**	
		High=2	**448**	
	Intrinsic/Extrinsic Rewards	**Low=1**	**448**	
		High=2	**448**	
	Work resources	**Low=1**	**449**	
		High=2	**447**	
Appraisals	**Perceived job satisfaction**	**Low=1**	**433**	
		High=2	**463**	
	Perceived job stress	**Low=1**	**517**	
		High=2	**379**	
Cultural dimensions	Perceived racial discrimination at work	Missing	200	Missing=1 (Italians)
		Not reported=1	268	1=2 Not reported
		Reported=2	432	2=3 Reported
	Affirmation/Maintenance culture	Missing	200	Missing=1 (Italians)
		Low=1	350	1=2 Low
		High=2	346	2=3 High
	Search Identity/Adoption of the host culture	Missing	200	Missing=1 (Italians)
		Low=1	351	1=2 Low
		High=2	345	2=3 High
Psychophysical health	Anxious-Depressive disorders	Low=1	448	
		High=2	449	
	Relational disorders	Low=1	449	
		High=2	448	
	General Health	Low=1	512	
		High=2	367	

4.6 Results

4.6.1 Ethnicity dimensions and Appraisals

The following analyses describe the associations between the Ethnicity variables and perceived job satisfaction/stress (hypothesis one).

Multivariable associations between Job satisfaction/stress (appraisals) and the ethnicity variables were carried out for the whole sample.

Table 4.4: Multivariable associations of Ethnicity dimensions with Appraisals

	Job Satisfaction		Work Stress	
	OR	C.I.	OR	C.I.
Ethnicity				
Italian			1.00	
Not Italian	n.s.	n.s.	2.386	1.668 - 4.485
Affirmation/Maintenance Culture				
Low	1.00		1.00	
High	1.610	1.130 - 2.902	1.832	1.378 - 3.111
Search Identity/Adoption host culture				
Low	1.00		1.00	
High	3.169	2.303 - 5.361	1.798	1.319 - 3.051
Perceived Discrimination				
Low	1.00		1.00	
High	.566	.339 -.954	2.576	1.958 - 4.631

Table 4.4 above shows that the group of migrant workers were more likely to perceive work stress. Moreover data show the associations of high level of Affirmation/Maintenance culture and Search Identity/Adoption of host culture with higher likelihood to perceive job satisfaction (in particular those who adopted host culture) and, at the same time, work stress. Finally the group of migrant workers who had experienced racial discrimination is more likely to report work stress and feel dissatisfied.

4.6.2 Ethnic minorities: Gender and Racial discrimination and Appraisals

Considering hypothesis two (see section 4.2) Table 4.5 below shows the significant associations between the appraisals, gender and racial discrimination in ethnic minorities.

Table 4.5: Association between Appraisals and Gender and Racial discrimination (df=3, p<.05)

	Job Satisfaction			Work Stress		
	OR	95 % C.I.		OR	95 % C.I.	
		Lower	Upper		Lower	Upper
Male no discrimination	1.00			1.00		
Female no discrimination	.771	.528	1.126	1.365	.932	2.000
Male discrimination	**.318**	.137	.853	**1.924**	1.364	2.814
Female discrimination	.439	.275	.922	1.620	1.098	2.389

Among the migrant ethnic groups, data identify that gender combined with racial discrimination has a powerful influence on Appraisals (see table 4.5 above).

In particular, data show that migrant males who have experienced racial discrimination as being most likely to perceive work stress and job dissatisfaction.

4.6.3 Cultural dimensions, Work characteristics and Appraisals

In accordance with hypothesis three about the associations of Cultural dimensions with Work characteristics and Appraisals, logistic regression analyses were carried out to explore the main effects of Acculturation, Ethnic identity and Perceived discrimination on Work characteristics and Appraisals for each ethnic group (see tables 4.6, 4.7, 4.8, 4.9, 4.10 below). Work characteristics were not associated directly with ethnicity dimensions and these data confirm the need to consider each ethnicity variable.

In fact the next sections will show that ethnicity in terms of acculturation strategies, perceived discrimination and ethnic identity is associated with work characteristics in specific ethnic groups and is combined with work characteristics in predicting health outcomes and appraisals.

a) *Cultural dimensions predicting Work characteristics and Appraisals (Eastern European eldercare workers)*

Among Eastern Europeans, data show the significant associations between Ethnicity dimensions and Work characteristics and Appraisals (see tables 4.6, 4.7 below).

Table 4.6: Multivariable associations of Ethnicity dimensions with Work characteristics (only the last step of the analyses is shown)

	Work Demands		Work Resources	
	OR	C.I.	OR	C.I.
Affirmation/Maintenance Culture				
Low		1.00		1.00
High	**.468**	273-.801	**1.807**	1.063-3.072

Table 4.7: Multivariable associations of Ethnicity dimensions with Appraisals (only the last step of the analyses is shown)

	Job Satisfaction		Work Stress	
	OR	C.I.	OR	C.I.
Affirmation/Maintenance Culture				
Low		1.00		1.00
High	**2.910**	1.673- 5.060	**.402**	.158-.911

Tables 4.6 and 4.7 above show the associations between an Affirmation/Maintenance culture and work characteristics, with a lower likelihood to perceive high levels of work demands and higher likelihood to perceive high levels of work resources. Furthermore this acculturation strategy is associated with perceived job satisfaction and lower risk of work stress.

b)   *Cultural dimensions predicting Work characteristics and Appraisals (Moroccan Factory workers)*

Among Moroccans, Search Identity/Adoption of the host culture and Perceived discrimination were associated with Appraisals (see table 4.8 below).

Table 4.8: Multivariable associations of Ethnicity dimensions with Appraisals

	Job Satisfaction		Work Stress	
	OR	C.I.	OR	C.I.
Search Identity/Adoption of the host culture				
Low		1.00		1.00
High	**.422**	.215-.751	**1.841**	1.071-2.573
Perceived discrimination				
Low		1.00		1.00
High	**.442**	.251-.777	**2.234**	1.321-3.778

Table 4.8 above shows the associations of Search Identity/Adoption of the host culture with high risk of perceived work stress and job dissatisfaction.

Finally Moroccan workers who had experienced perceived discrimination were also more likely to report work stress and feel dissatisfied.

It seems that for this ethnic group feeling discriminated against and the risk of adopting the host culture exacerbates the perception of job dissatisfaction and job stress.

c)   *Cultural dimensions predicting Work characteristics and Appraisals (Ghanaian workers)*

Finally among Ghanaian workers, ethnicity dimensions were associated with Work characteristics and Appraisals (see tables 4.9 and 4.10 below).

Table 4.9: Multivariable associations of Ethnicity Dimensions with Work characteristics

	Rewards		Work Resources	
	OR	C.I.	OR	C.I.
Perceived discrimination				
Low		1.00		1.00
High	**.581**	. .325- .976	**.540**	.304-.959

Table 4.10: Multivariable associations of Ethnicity Dimensions with Appraisals

	Job Satisfaction		Work Stress	
	OR	C.I.	OR	C.I.
Perceived discrimination				
Low		1.00		1.00
High	**.498**	.203-.905	**1.862**	1.026-2.582

The group of Ghanaian workers who had experienced perceived discrimination were less likely to perceive Work resources, Rewards and Job satisfaction and more likely to suffer Work stress.

It seems that perceived discrimination increases the risk of marginalization and influences the perceived job characteristics related to poor health conditions.

4.6.4 Main effects of Ethnicity variables and Work characteristics on Health outcomes and Appraisals.

In this part of the study ANCOVAs (Analysis of Variance and Covariance) were carried out to test the associations between Work characteristics and Cultural dimensions and health outcomes and appraisals for the overall sample (see tables 4 . 11 and 4.12 below). In particular we examined combinations of work demands and perceived discrimination (as independent variables), and health outcomes and appraisals (as dependent variables). Other variables involved in the model (work resources/rewards and ethnicity dimensions) were included as covariates.

Table 4.11: ANCOVA of Ethnicity dimensions and work characteristics on Health outcomes

	Anxious-Depressive disorders		Relational disorders		Health status	
	F	*p*	F	*p*	F	*p*
Covariates						
Rewards	1.818	.178	11.642	**.000**	1.814	.178
Work resources	10.192	**.015**	12.229	**.000**	6.259	**.013**
Affirmation/Maintenance culture	7.499	**.021**	9.647	**.002**	5.962	**.015**
Search Identity/Adoption host culture	10.629	**.012**	13.401	**.000**	11.884	**.000**
Main Effects						
Low/High Work demands	7.847	**.005**	11.161	**.001**	10.262	**.001**
Low/High perceived discrimination	2.617	.106	5.107	**.038**	4.158	**.042**
Work demands *Perceived discrimination	.003	.957	6.913	**.031**	1.720	.190

The first ANCOVA (table 4.11 above) examined Rewards, Work resources, Affirmation/Maintenance culture and Search identity/Adoption of host culture as covariates, with Anxious-Depressive disorders, Relational disorders and Physical Diseases as the dependent variables, and Work demands and Perceived discrimination as the Independent variables. The first analyses on Anxious–Depressive disorders revealed a significant effect for Anxious-depressive disorders in relation to the work demands. The Work resources, Affirmation/Maintenance culture and Search Identity/Adoption host culture covariates were also significant in the model.

Moreover with respect to Relational disorders, the results showed the significant effect for Relational disorders in relation to Work demands and Perceived discrimination both independently and in combination and all the covariates were also significant in the model. Finally considering Physical diseases, table 4.11 above showed the significant independent direct effects of Work demands and Perceived discrimination on Physical

diseases and the associations of the Work resources, Affirmation/Maintenance culture and Search Identity/Adoption host culture (as covariates) with physical problems.

Table 4.12: ANCOVA of Ethnicity dimensions and work characteristics on Appraisals

	Job Satisfaction		Work stress	
	F	*p*	F	*p*
Covariates				
Rewards	12.479	**.000**	.351	.554
Work resources	10.177	**.000**	727	.394
Affirmation/Maintenance culture	3.400	.066	2.174	.141
Search Identity/Adoption host culture	4.871	**.033**	4.034	.065
Main Effects				
Low/High Work demands	1.198	.274	5.198	**.024**
Low/High perceived discrimination	6.442	**.011**	7.352	**.009**
Work demands *Perceived discrimination	1.257.	.263	279	.598

With respect to Appraisals, data revealed a significant effect for Job satisfaction in relation to perceived discrimination. The Work resources/rewards and Search Identity/Adoption host culture covariates were also significant in the model.

The ANCOVA on work stress showed significant independent effects of Work demands and perceived discrimination on perceived work stress and the lack of control variable as covariates.

Findings from these analyses suggested that the effects of work demands and ethnicity dimensions on health outcomes and appraisals could be independent or combined depending on the outcomes and, at the same time, work resources/rewards and other ethnicity dimensions could have a role in the model. These findings were investigated more in detail using logistic regression models to explore the ethnicity dimensions and their moderator or mediator effects in combination with work characteristics in predicting health conditions for each ethnic group (see the following

chapters).

4.7 Summary of ethnicity dimensions and discussion

Findings from this part of the study show the profile of the main effects of ethnicity on Work characteristics and Job satisfaction/stress (appraisals).

Data confirmed the importance of investigating the main effects of the ethnicity variables on the dimensions related to occupational stress in different ethnic groups to test a model of stress that integrates Ethnicity and work related aspects in a transactional perspective.

Focus on each aspect of ethnicity and its potential relationships integrates findings from previous studies that considered ethnicity only in terms of a descriptor thus reducing all the possible effects related to this variable.

The results relevant to the four hypotheses can be summarized as follows:

Hypothesis 1: Migrant workers may be more likely to perceive work stress and those with high recourse to Affirmation/Maintenance culture are more likely to report work stress but, at the same time, they perceive greater job satisfaction. Moreover migrant workers who favour Search Identity/Adoption of t h e host culture show similar profiles to the previous group with respect to appraisals but in particular they feel more satisfied. Finally those who had experienced racial discrimination are more likely to report work stress and feel dissatisfied.

Hypothesis 2: Racial discrimination, particularly in combination with gender and ethnicity, had a powerful influence on Job Satisfaction/stress (appraisals) and male discrimination seemed to be more associated with perceived work stress and perceived job dissatisfaction. This effect of racial discrimination is something commonly found in the literature, with studies finding that migrant workers tend to report higher prevalence of work stress related

to discrimination (Klonoff et al., 1999; Troxel et al., 2003; Smith et al., 2005).

Hypothesis 3: Each ethnic group had different profiles of Cultural dimensions on Work characteristics and Job satisfaction/stress (appraisals).

It seems that the interest in engaging with their ethnic culture related to Affirmation/Maintenance culture strategy is relevant for the Eastern European group and its associations with specific job characteristics such as perceived work demands and work resources might be useful in promoting wellbeing. Among this group, perceived discrimination was not reported because the respondent' job type involved limited relationships with other groups.

Moreover among Moroccan group, trying to adopt the host culture is related to perceive work stress and job dissatisfaction as well as feeling discriminated against.

Only among Ghanaian workers could an Adoption of the host culture strategy be considered a behavioral pattern useful to the integration with dominant culture. At the same time perceived discrimination seems to be more salient in this group and it might increase the risk of marginalization and influence the perceived job characteristics related to poor health conditions (hypothesis three).

Hypothesis 4: Findings from ANCOVA analyses suggested that the effects of work demands and ethnicity dimensions on health outcomes and appraisals could be independent or combined depending on the outcomes and, at the same time, work resources/rewards and other ethnicity dimensions could have a role in the model (hypothesis four).

These tested hypotheses could be added to the previous chapter results to provide a map of the associations between Ethnicity dimensions and health outcomes and appraisals before proposing ethnicity variables in occupational stress models.

4.8 Summary

To propose and evaluate models of stress that include individual differences, work characteristics, cultural dimensions, appraisals and health outcomes it was helpful to investigate the main effects of ethnicity and its associations with perceived job satisfaction/stress and job characteristics. Findings have confirmed the main effects of cultural dimensions on work characteristics and occupational health dimensions. In the next chapters where we describe the major stress models in order to understand how Ethnicity should be considered in this specific research area and to propose a model of Ethnicity and work related stress.

Chapter 5: Ethnicity and Stress Models

5.1 Chapter introduction

This chapter describes the major theoretical models of stress and work related stress in order to give a role to the ethnicity dimensions in this specific research area.

In accordance with the literature on stress and wellbeing at work, the chapter underlines the important role played by individual differences in

the stress process, with reference to moderating and mediating effects.

Ethnicity and Culture represent critical issues because there has been not enough consideration of them in studies of work stress.

For this reason, ethnicity and all its aspects seem to be variables that could be considered in the stress models as an individual difference (moderator or mediator factor) or as a potential source of stress.

Finally, the possible role of the culture in the work related stress models is reported in the last part of the chapter 5 and it introduces chapter 6 where we try to investigate in the overall sample, in each ethnic group and in the control group the associations between Individual differences, Work characteristics, Cultural dimensions, Appraisals and Health outcomes in order to propose and to test a model that integrates Ethnicity and work related aspects in a transactional perspective.

5.2.1 Theories and models of stress and wellbeing at work

In accordance with the issues reported in the systematic review in Chapter 2, ethnicity should be considered not only as an objective category but also as an individual difference or a potential source of pressure in the work stress models.

In the next section we will described many different models of workplace stress as: Person-Environment fit, the Job Characteristics Model, and the Michigan Model, some of the most currently popular and influential work-stress models, including the Demands-Control Support, and Effort- Reward imbalance models, Lazarus and Colleagues' Cognitive theory of Psychological Stress and Coping, and the Transactional viewpoint of Cox and Colleagues. Finally, other notable new approaches that build on some of the above models will be described, such as, the Job-Demands- Resources model, the Demand-Induced-Strain-Compensation model and the Demands-Resources-Individual Effects model.

Therefore in the stress area each aspect of the ethnicity dimension can be relevant and needs to be considered to understand the possible role of the culture in work-related stress research and to develop and test a general model that integrates a transactional model of stress with the different cultural dimensions.

5.2.2 Person-Environment fit

The Person-Environment (fit or misfit) model (PEFM) defines psychosocial stress in terms of fit (needs-supplies fit/abilities-demands fit and objective vs. subjective fit) between the person and the environment (Caplan, 1983). The model states that stress refers to any characteristic of the job environment, which poses threat to the individual. Two types of stress may threaten the person: either demands, which he/she may not be able to meet, or insufficient resources to meet his/her needs.

Three kinds of strain are conceived to be functions of misfit or threat to individual wellbeing: *psychological strain* (e.g., anxiety); *physiological strains* (e.g., high cholesterol); and *behavioral symptoms of strain* (e.g. smoking). The Person-environment fit model has been mainly criticized by Lazarus (1991), because it excludes the role

played in the coping process by appraisal and subjective meaning of work related interactions. Early descriptions of the PEFM can be found in French, Rogers, and Cobb (1973); Caplan, Cobb, French, Van Harrison, and Pinneau (1982); Caplan (1983). In the last decade, PEFM principles have been used in the comprehension of stress and coping in health professionals (Sutherland & Cooper, 1990), to test Hispanic employee's adaptation to work stress (Keita & Hurrell, 1994), and to evaluate stress in teachers (Pithers & Soden, 1999).

5.2.3 The Job Characteristics Model

The Job Characteristics Model, developed by organizational psychologists Hackman and Oldham (1980), is a normative approach to job enrichment. It specifies five core job dimensions that will lead to critical psychological states in the individual employee. The first three dimensions are: skill variety (the range of tasks performed), task identity (the ability to complete the whole job from start to finish), and task significance (the impact of the job on others). These three dimensions contribute to the meaningfulness of the work - in other words, the higher the task variety, identity, and significance, the more meaningful the work is for the employee. The fourth job dimension is autonomy (the extent of discretion and freedom an employee has over his or her tasks) and the higher this is, the more the employee feels responsible for the outcome of his or her work. The fifth dimension is feedback (the extent to which the job provides the employee with information about the effectiveness of his or her performance) which allows the employee to appreciate the outcome of his or her efforts. As a consequence of providing positive psychological states, the JCM suggests that positive outcomes will occur for the individual and the organization: high motivation, high-quality performance, high job satisfaction, low absenteeism, and low labour turnover. In conjunction with the model, Hackman and

Oldham (1980) developed the Job Diagnostic Survey, a questionnaire for job analysis, the outcomes of which imply five main types of job redesign: combining tasks; formation of working units; making a client-centered structure; creating feedback methods; and job enrichment. According to Kompier (2003) there is an impressive literature relating the outcome variables to the core job characteristics, and despite criticisms of the three stage model, with some claiming that two-stages better fit the data, a meta-analysis by Viswesvaran and Ones (1995) supported the three-stage conceptualization. This model appears well integrated with the Job Diagnostic survey, providing a useful package of theory, survey, and intervention; however it is limited in the variety of the core job characteristics that are considered important, with only a small number of key psychological states.

5.2.4 The Michigan Model

A group of researchers at the Institute of Social Research in the University of Michigan, conceptualize stress as a "process in which individual and environmental characteristics interact to produce a variety of outcomes" (Israel, Schurman and House, 1991).

These outcomes include behavioral, psychological, and physiological responses. The "Michigan Model" of the stress process was originally presented by Katz and Kahn (1966), and has been subsequently extended and refined by James House and colleagues (House, 1981; Israel et al., 1991; Israel, Schurman, Hugentobler and House, 1992). This model brought together many previous models of different parts of the overall stress process.

Although the focus of House's research is upon social support as a conditioning or modifying variable in the work stress process, the paradigm is a general one, which can

encompass any stressor, response or modifying variable. The Michigan Model includes direct, mediated and moderated pathways for both person and environmental factors influencing short and long term outcomes. Environmental stressors, such as role ambiguity, conflict, lack of participation, job security, workload, lack of challenge, are subjectively perceived, and then personality variables, demographics, and social support moderate these perceptions to lead to health outcomes (Kompier, 2003). Role issues, such as role conflict, role ambiguity, and role expectations are particularly central stressors, hence it is sometimes known as the Role Stress Approach (Kompier, 2003).

Perceptions are of central importance in the stress process, as is the idea that the path from objective environment to long-term outcome is a complex one.

Furthermore, in one recent formulation of the model (Israel et al., 1992), there is an allowance for reciprocal causation and feedback within the process, thus addressing one of Lazarus' criticisms regarding the static nature of this paradigm.

5.2.5 Demand Control Support Model

The Demands-Control model (Karasek, 1979) is currently perhaps the most influential model of stress in the workplace (Kompier, 2003). The original model focuses on two dimensions of psychosocial job characteristics, which are job demands and job control.

The demands component of the model is most often conceptualized as time pressure due to a heavy workload (Fernet, Guay & Senécal, 2004; Karasek & Theorell, 1990), but it may be broadened to also include role ambiguity and role conflict. The job control dimension is often conceptualized as the sum of two components, namely skill discretion and decision authority. The decision authority component refers to the opportunity to make independent decisions and to have a say in what happens in the workplace. Fernet et al.

(2004) pointed out that the decision authority component concerns "opportunities for control and decision and therefore … job control per se". In agreement with this view Wall, Jackson, Mullarkey and Parker (1996) recommended that measures of job control should focus on the decision authority component. The skill discretion component mostly addresses task variety and appears only obliquely related to job control. The JDC model has been expanded to include a support dimension and is referred to as the job demand-control-support model (JDCS model). The expanded model makes the additional prediction that low levels of social support from supervisors and peers will contribute to job strain.

The basic premise of Karasek's (1979) JDC model is that job demands and job control interact in such a way that they create different psychosocial work experiences for the individual, depending on the respective magnitudes of job demands and job control. Karasek (1979) classified these work experiences into four types of jobs, namely high- strain jobs (high demands and low control), active jobs (high demands and high control), low strain jobs (low demands and high control), and passive jobs (low demands and low control).

Van der Doef and Maes (1999) drew a distinction between two hypotheses associated with the JDC model. The first hypothesis, labelled the strain hypothesis, predicts that job demands and job control combine additively to produce negative psychological and health outcomes in environments characterized by high job demands and low job control. The strain hypothesis holds the practical implication that job demands and job control need to be addressed to reduce job strain. The second hypothesis, labeled the buffer hypothesis, predicts that job demands and job control combine multiplicatively and that job control moderates the negative effect of job demands on health and well-being. Specifically, high job control is predicted to ameliorate the negative effects of high job demands (Karasek, 1979). The buffer hypothesis holds the practical implication that

improved health and psychological well-being in employees may be obtained by increasing job control without reducing job demands.

The inclusion of social support in the later model (Karasek & Theorell, 1990) also leads to a hypothesized buffering effect of social support on high levels of job demands (Cooper, Dewe, & O'Driscoll, 2001).

Despite the expansion of the model by Karasek and Theorell (1990) to include a support dimension, the model can also be criticized for its over- reliance on a limited number of job characteristics which may not reflect the dynamic multi-stressor nature of modern workplaces. Secondly it can be criticized because in the model, these job characteristics are seen as "objective", despite the fact that they are measured using subjective self- report measures (Frese & Zapf, 1999). Thirdly (despite the subjective nature of the job characteristics measured) the model takes virtually no account of individual differences in perception or susceptibility to stressors, and stressors are seen to have a rather mechanistic effect on individuals. The model therefore cannot explain why the same levels of demand and control in two individuals may give rise to different behavioral or health outcomes (Perrewe and Zellars, 1999). This is related to the "oversimplification assumption" which as stated by Payne, Jick, & Burke (1982) comes from focusing too much on environmental demands, and is the erroneous notion that the presence of an environmental demand is an indication that the event *is* demanding, when in some cases for some individuals it clearly is not. Other problems with the DCS model include its definition of demand as based primarily on workload and no other types of demand (Cox et al., 2000) and that the conceptualization of control is quite a narrow view of this multi-dimensional construct (Carayon, 1993, Cox et al. 2000). For example, Parkes (1989) distinguishes other types of control not mentioned in the DCS, such as control as an objective characteristic of the work situation, as a subjective evaluation on how controllable a work situation is, and also a

general belief on the extent to which important outcomes are controllable. The DCS model also assumes that high control is always a desirable state (and a positive moderator of negative demands).

The DCS model can be used to provide empirical support for primary (organizational or job characteristics) level interventions, but it is arguable whether it can be used to make recommendations about secondary level interventions (e.g. individually focused measures such as stress-awareness training). This is because the DCS model presupposes *a priori* which factors are important, and has no way of accounting for the influence of pervasive problems in organizations that do not fit in with the remit of the theory.

5.3.1 Transactional Theories of Stress

Cox and Griffiths (1995) make a distinction between two types of psychological model of work stress, *interactional* or structural approaches, such as the DCS model, and *transactional* or process models. Interactional models focus on the structural characteristics of the stress process, i.e. which stressors are likely to lead to which outcomes in which populations, however transactional views are more cognitive, and focus on the dynamic relationship that occurs between individuals and their environment in terms of mental and emotional processes (Cox et al., 2000). Transactional views often place emphasis on the role of subjective perceptions of the environment, and are more likely to acknowledge the possible impact of individual difference factors, such as differences in coping, appraisal, personality, locus of control etc. Some of the main models with these features in the occupational stress literature are described below, together with some implications for practice and intervention.

5.3.2Effort Reward Imbalance

The Effort-Reward Imbalance (ERI) model is currently one of the most popular work stress models and considers the role of situational, personal, and social factors in the etiology of workplace strain. Johannes Siegrist and his colleagues (Siegrist, Dittmann, Rittner, & Weber, 1982) initially developed the ERI model in early 1980s because of a growing gap in the literature surrounding the causes of cardiovascular disease. In particular, they were interested in how the work environment could affect the experience of distress and ill health. The notion of social exchange and reciprocity in the work setting is the central focus of the ERI model. Siegrist and his colleagues (Siegrist, 1995b; Siegrist & Klein, 1990) viewed the social environment as a crucial element in the development and progression of disease and illness and suggested that the work role serves particular, crucial functions within an employed adult's life. Specifically, work allows the individual to create and maintain self- regulatory functions such as self-esteem (experienced through formal and informal reward structures), self-efficacy (achieved through work-related activities) and social identity (belonging to a social network) (Siegrist, 1996, 1998). Additionally, work is viewed as a type of social contract, based on the premise of reciprocity with fair and equal exchanges between employees and employers (Siegrist, 1996; Siegrist & Marmot, 2004). Siegrist (2000) argues that the work role offers opportunities to maintain crucial self-regulatory functions by providing a means of "contributing and performing, of being rewarded and esteemed and of belonging to some significant group". The basis of the ERI model is psycho-physiological whereby the failure to maintain adequate social status or to retain essential resources is hypothesized to create excessive activation of the nervous system – a precursor for particular forms of hypertension (Siegrist et al., 1982). Two main components of the work environment are identified in the model: effort and reward. The

balance between these factors is considered critical to maintaining employee health (Siegrist, 2001). Effort is proposed to have two components: intrinsic effort, from the personal motivations of the individual, such as a need for control and overcommitment (a tendency to make excessive efforts or be committed to unrealistic goals); and extrinsic motivations, or external pressures, such as workload (similar to the concept of job demands in the DCS model, Kompier, 2003). External demands are also proposed to relate to the status of the labour market and how easily alternative employment can be found. Three main work-related rewards are identified in the model: money, esteem, and status control. Status control, being one of the more crucial components of the effort-reward theory, comprises those components of work that help to maintain self- regulatory needs (Siegrist, 1996). Job stability, the relative availability of promotional prospects and position within the work hierarchy, contributes to an individual's sense of status control. According to the model, threats to the continuity of the social role (i.e., threats to an individual's status control or self-esteem) produce emotional distress that ultimately increases the risk of physical and psychological illness (Siegrist, 1996). Extended failure to maintain these self-regulatory needs can result in a state of 'active distress' and activation of the autonomic nervous system (Siegrist et al., 1986). Chronic activation of the body's defence mechanisms may lead to physical illness or mental distress (Esler & Kaye, 2000).

Despite the similarities between earlier notions of equity and the current ERI model, Siegrist and Marmot (2004) noted that there are a number of key differences. Firstly, the ERI model argues that only conditions of high effort and low reward are associated with distress although equity theory considers non reciprocity in both directions as potentially stressful (Adams, 1965). Secondly, the ERI model does not explicitly mention a 'referent' unlike equity theory that suggests that individuals will make comparisons with others to determine whether their input/output ratio is fair. By removing the need to identify a

referent the ERI model avoids unnecessary complexity and issues typically faced when applying equity theory in an occupational context (Taris, Kalimo, & Schaulfeli, 2002). Further, the ERI model specifies that individual differences related to a need for control are likely to have a significant influence on employee reactions to inequitable conditions. Kompier (2003) points to a lack of conceptual clarity about how "overcommitment" is used, as sometimes it is treated as a moderator, a personal characteristic, or a type of behavior.

While the ERI expands on the DCS model in several key ways, and the predictive validity of the model is good, the role of individual differences is limited to the intrinsic effort dimension, and as the factors that influence subjective perceptions of efforts and rewards are not specified, there are no proposed mechanisms by which individual differences may influence the stress perception process.

5.3.3 The Cognitive theory of Psychological Stress and Coping

The transactional model of stress and coping (Lazarus & Folkman, 1984) has been extensively researched, and at present, its theoretical underpinnings are widely accepted by researchers and practitioners (e.g. Yu, Chiu, Lin, Wang & Chen, 2007; Cooper, Dewe & O' Driscoll, 2001; Folkman & Lazarus, 1985; Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986). This model's central tenet is that a potentially stressful event will trigger the primary appraisal process in which an individual assesses the degree of threat in relation to his or her wellbeing. When an event is perceived as threatening or a challenge, the secondary appraisal process provides a global assessment of the individual's coping resources and ability to manage the threat/challenge. Coping responses are initiated after the cognitive appraisals and the eventual psycho-physiological experience (stress outcomes) of

this potentially stressful event depends on the effectiveness of one's cognitive appraisals and coping processes. The stress outcomes will then feed back to the cognitive appraisal stages for further actions if required. It is worth noting that the sequence of influence between primary appraisal and secondary appraisal does not always present itself as one being more important than the other (i.e. primary vs. secondary), or that one always precedes the other (Lazarus & Folkman, 1984). Their relationship is far more dynamic but as a basic process Lazarus and Folkman conceptualized a linear sequence flowing from primary to secondary appraisals to coping and eventually, to stress outcomes as a reflection of the basic pathways within the dynamic process. Therefore the key premise of Lazarus and Folkman's transactional model is that primary appraisal, secondary appraisal and coping strategies mediate the relationship between stressor and the individual's stress outcomes. Folkman and Lazarus (1991) conceptualized coping as a complex, organized sequence of behaviors that include cognitive appraisal, action impulses, and reflect physiological aspects of a particular emotion.

Essentially, Folkman and Lazarus have included the psycho-physiological aspects of emotion as part of coping that occur after the appraisal of a stressful event. This is logical and realistic since an appraised stressor will elicit immediate psycho-physiological reactions or stress outcomes. However, there is no empirical test to date on the transactional model's entire linear process with its pathways between the variables that includes stress outcomes after cognitive appraisal.

The impact of cognitive appraisal on stress outcomes has been examined extensively over the past decades (e.g. Folkman, 2008; Oatley & Johnson-Laird, 1987; Ortony, Clore & Collins, 1988; Smith & Kirby, 2001).

5.3.4 Cox's Transactional model of Occupational stress

Cox's transactional model of work stress (Cox, 1978; Cox & Mackay, 1981; Cox et al, 2000) is closely related to the work of Lazarus and colleagues and many of the processes and stages in the two models are similar, however there are certain important differences in Cox's model, particularly a clarified structure and greater focus on occupational health and individual differences (Cox & Ferguson, 1991).

Cox's framework (1978) has five stages. The first stage represents the demand or job characteristics of the environment, and the second stage represents the individuals' perceptions of these demands relative to their ability to cope (Cox et al., 2000). These two stages could be seen as analogous to the primary appraisal stage of Folkman and Lazarus' model (1981). Stress is conceptualized as being the psychological state that occurs when there is a mismatch between perceptions of the significance of a demand, and beliefs about one's ability to cope with it (Cox et al., 2000). Cox and Ferguson (1991) describe how this primary appraisal process is influenced by the internal and external demands experienced, as well as coping abilities and resources, and support from others.

The third stage of the model is associated with the mental and physical changes that the person undergoes as a result of the recognition of a stress state, and involves secondary appraisal and coping, which are analogous to those in Folkman and Lazarus' model (Cox et al, 2000). Cox and Ferguson (1991) describe the psychological changes that occur in a stress state, including mood change, emotional experience, e.g. tension, feeling worn out, or depressed, as the defining feature of the stress state for the individual. Thus the awareness of a stressful problem initiates a cycle of behaviors that are "an adjustment to the situation, or an adjustment of the situation" failure of which leads to negative health outcomes. The fourth stage of the model represents the outcomes or consequences of coping, and

finally, the fifth and last stage is feedback which is proposed to occur in relation to all other stages (Cox et al, 2000).

Cox and Ferguson (1991) state that primary appraisal is a continual monitoring process, and secondary appraisal is a distinct decision making process, and that the entire stress process is grounded in a "problem solving" context. Cox (1987) writes that the basic framework for this context involves recognition of a problem, diagnosis, suggestion of possible solutions, evaluation of suggested solutions, implementation, feedback, and learning, and that such a problem-solving approach can also be used as the basis for organizational interventions.

Cox and Ferguson (1991) make a point of stressing the importance of individual differences in this transactional model. Differences in locus of control, hardiness, and coping resources are deemed particularly important, and may exert effects in the model via a mediating role in appraisal, and a moderating role in helping to determine health outcomes.

A clearer structure, the inclusion of a feedback stage, and the emphasis on individual differences which exert an influence by mediation and moderation, represent important steps forward over many other models; however Cox warns that in reality, the problem solving process in a stress setting is unlikely to be so rational (Cox, 1987). For example, appraisal and coping processes may not be open to such conscious evaluation, and may be carried out with bias, insufficient information, to appear irrational or counterproductive, with consideration of a limited number of solutions, and with little or no attention paid to feedback or past learning. However, it could be argued that these problems could be what make the difference between successful and unsuccessful problem-solving episodes.

Much of the evidence related to the above model is very similar to that related to Folkman and Lazarus' model, for example research on coping and appraisal. However, while there is plenty of supporting research on the main effects of individual difference factors such as hardiness, locus of control, self-efficacy, and their relationship to health outcomes,

results into the mediating and moderating roles of these factors are far less conclusive (Cooper et al., 2001; Spector, 2003; Parkes, 1994). Moreover, like the cognitive-relational approach, the very complexity of Cox's model means that it is hard to empirically capture, unlike the more simple models of Karasek (1979) and Siegrist (1996).

5.4.1 New Stress models: Demand Induced Strain Compensation model

In the light of the conceptual and practical limitations of the Demand- Control Model and Effort-Reward Imbalance Model, and their apparent unsuitability for measuring job demands and job resources associated with today's service work, De Jonge and Dormann (2003; 2006) developed a new model of job stress. This model, the so-called Demand-Induced Strain Compensation (DISC) Model, tries to unify principles that are common to both models, and thus create a more cohesive theoretical model of job stress.

The DISC Model is premised on four key principles.

Firstly, De Jonge and Dormann (2003) emphasise the need to recognise the multidimensionality of concepts. They observe that job demands, job resources, and job-related strains each contain cognitive, emotional, and physical elements. In the domain of job stress, stressful stimuli can be categorized under two broad main categories: job demands and job resources (Frese & Zapf, 1994; Schaufeli & Bakker, 2004). Job demands refer to the degree to which the work environment contains stimuli that require sustained cognitive, emotional and/or physical effort (cf. Jones & Fletcher, 1996). Job resources are conceptually similar to coping options; they can be broadly conceptualized as a kind of energetic reservoir that can be tapped when the individual has to cope with stressful stimuli (Hobfoll, 1989; 2002). However, although job resources "power up" stress responses, individuals — when confronted with job stress — strive to minimize net loss of resources. In

addition, when workers are not confronted with job demands, they strive to develop resource surpluses in order to offset the possibility of future loss ("energy accumulating behaviour"; Hobfoll, 1989). As both job demands and job resources are multi-dimensional constructs, they may basically comprise cognitive, emotional and/or physical components. As far as job demands are concerned, three types can be distinguished: cognitive demands that impinge primarily on the brain processes involved in information processing (Hockey, 2000); emotional demands which refer primarily to the effort needed to deal with organizationally desired emotions during interpersonal transactions (Morris & Feldman, 1996); and physical demands that are primarily associated with the muscle-skeletal system (i.e. motoric and physical aspects of behavior; Hockey, 2000). Similarly, job resources may have a cognitive-informational component (e.g., colleagues providing information), an emotional component (e.g., colleagues providing sympathy and affection), and a physical component such as instrumental help of colleagues or ergonomic aids (Cohen & Wills, 1985; Cutrona & Russell, 1990). Secondly, the Triple Match Principle (TMP) proposes that the strongest, interactive relationships between demands and resources are observed when demands and resources and strains are based on qualitatively identical dimensions. For instance, emotional support by colleagues is most likely to moderate (i.e., mitigate) the relationship between emotional demands (e.g., irate customers) and emotional exhaustion. The TMP suggests not only that stressors and resources should match (Cohen & Wills, 1985), or that resources should match strains (Frese, 1999), but also that stressors should match strains. For instance, insolent customers are more likely to cause emotional disorders than physical complaints. Thirdly, the compensation principle proposes that the negative effects of job demands can be counteracted through the availability and activation of job resources. It is also predicted that job resources from

within the same domain as the job demands (i.e., cognitive, emotional, or physical) will produce a greater likelihood of counteracting the negative job demands.

The fourth principle of the DISC Model is that of balance. It is theorized that the optimal conditions for active learning, growth, and creativity exist where a balanced mixture of (high) job demands and corresponding job resources occurs. For instance, employee creativity may occur if an employee has a lot of job control in facing high mental demands. Whilst a body of empirical evidence for the DISC Model has not been established in the job stress literature due to its recent development, De Jonge, Dormann and Van den Tooren (2008) presented evidence for the assumptions in the model. Studies conducted to test the principles of the DISC Model show that results have been supportive. More specifically, eight out of eleven DISC studies (73%) showed evidence for the TMP.

5.4.2 The Job Demands-Resources Model

The main assumption of the Job Demands–Resources (JD–R) model (Bakker & Demerouti, 2007; Bakker, Demerouti, De Boer, & Schaufeli, 2003a; Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003b; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) is that every occupation has its own specific risk factors associated with job-related stress. These factors can be classified in two general categories (i.e. job demands and job resources), thus constituting an overarching model that may be applied to various occupational settings, irrespective of the particular demands and resources involved. Job demands refer to those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs.

Examples include high work pressure, an unfavourable physical environment and irregular working hours. Although job demands are not necessarily negative, they may turn into job stressors when meeting those demands requires high effort from which the employee fails to recover adequately (Meijman & Mulder, 1998).

Job resources refer to those physical, psychological, social, or organizational aspects of the job that are either: functional in achieving work goals; or reduce job demands and the associated physiological and psychological costs; or stimulate personal growth, learning, and development.

Hence, resources are not only necessary to deal with job demands, but they also are important in their own right. This corresponds with Hackman and Oldham's (1980) job characteristics model that emphasizes the motivational potential of job resources at the task level, including autonomy, feedback, and task significance. In addition, this agrees on a more general level with conservation of resources (COR) theory (Hobfoll, 2001) that states that the prime human motivation is directed towards the maintenance and accumulation of resources. Accordingly, resources are valued in their own right or because they are meant to achieve or protect other valued resources. Job resources may be located at the macro, organizational level (e.g. salary or wages, career opportunities, job security), the interpersonal level (e.g. supervisor and co-worker support, team climate), the specific job position (e.g. role clarity, participation in decision making), and at the level of the task (e.g. skill variety, task identity, task significance, autonomy and performance feedback).

A second premise of the JD–R model is that two different underlying psychological processes play a role in the development of job-related strain and motivation. The first is a process of health impairment, which suggests that demanding jobs or jobs with chronic job demands (e.g. work overload, emotional demands) exhaust employees' mental and physical resources and may therefore lead to the depletion of energy (i.e. a state of

exhaustion) and to health problems (e.g. general health and repetitive strain injury - Bakker, Demerouti, & Schaufeli, 2003; Demerouti *et al*., 2000, 2001; Leiter, 1993). According to Hockey (1993), individuals use performance-protection strategies under the influence of environmental demands. Such strategies are the mobilization of sympathetic activation (autonomic and endocrine) and increased subjective effort (use of active control in information processing). Even though the use of these strategies may inhibit decrements in primary task performance and indirect degradation may be identified. Such degradation may take the form of strategy adjustments (narrowing of attention, increased selectivity, redefinition of task requirements), and fatigue after-effects (risky choices, high levels of subjective fatigue). The long-term effect of such compensatory strategies may be a draining of an individual's energy, which could eventually result in a breakdown.

The second process proposed by the JD–R model is motivational in nature, whereby it is assumed that job resources have motivational potential and lead to high work engagement, low levels of cynicism and excellent performance. Job resources may play an intrinsic motivational role because they foster employees' growth, learning and development, or they may play an extrinsic motivational role because they are instrumental in achieving work goals. In the former case, job resources fulfil basic human needs (Deci & Ryan, 1985), such as the needs for autonomy (DeCharms, 1968), competence (White, 1959), and relatedness (Baumeister & Leary, 1995). For instance, proper feedback fosters learning, thereby increasing job competence, whereas decision latitude and social support satisfy the need for autonomy and the need to belong, respectively (Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). Job resources may also play an extrinsic motivational role, because work environments that offer many resources foster the willingness to dedicate one's efforts and abilities to the work task. In such a case it is likely that the task will be completed successfully and that the work goal will be attained. For

instance, supportive colleagues and proper feedback from one's superior increase the likelihood of being successful in achieving one's work goals. In either case, be it through the satisfaction of basic needs or through the achievement of work goals, the presence of job resources leads to engagement, whereas their absence evokes a cynical attitude towards work (Demerouti et al., 2001; Lewig, Xanthopoulou, Bakker, Dollard, & Metzer, 2007; Schaufeli, Bakker, & Van Rhenen, 2009).

Next to the suggested main effects of job demands and resources, the JD– R model proposes that the interaction between job demands and job resources is important for the development of job strain and motivation. Inherent in the definition of job resources is the assumption that these resources may *buffer* the impact of job demands on job strain, including burnout (Bakker, Demerouti, & Euwema, 2005; Bakker et al., 2003b; Xanthopoulou et al., 2007b). The buffering role of job resources is consistent with the Demand–Control Model (DCM; Karasek, 1998) and the Effort–Reward Imbalance Model (ERIM; Siegriest, 1996). Whereas the DCM states that control over the execution of tasks (autonomy) may buffer the impact of work overload on job stress; and the ERIM states that rewards may minimize the unfavourable effects of effort expedition, the JD–R model expands these views and states that different types of job demands and job resources may interact in predicting job strain.

The final and more recent fourth proposition of the JD–R model is that job resources particularly influence motivation or work engagement when job demands are high. This represents the so-called coping hypothesis (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Bakker, Van Veldhoven, & Xanthopoulou 2010; Hakanen, Bakker, & Demerouti, 2005). Job resources (skill utilization, learning opportunities, autonomy, colleague support, leader support, performance feedback, participation in decision making, and career opportunities) predicted task enjoyment and organizational

commitment particularly under conditions of high job demands (workload and emotional demands). This indicates that resources become most salient under demanding conditions. In other words, there is a need for a challenge (i.e. a demanding condition) in order for job resources to be translated into task enjoyment and work engagement. This is in line with Hobfoll (2002) who has argued that resource gain in itself has only a modest effect, but instead acquires its saliency in the context of resource loss. This implies that job resources gain their motivational potential particularly when employees are confronted with high job demands. In other words, the coping hypothesis suggests that under stressful conditions individuals will be more likely to use resources as a *coping* mechanism or stress-reducing action.

5.5 The importance of Individual differences and combined effects

There is much support for many of the effects of numerous individual differences (IDs) factors in work stress and health outcomes, but there is little support for the combined effects of these factors in the same sample (Long, Kahn, & Schutz, 1992). However, Jick and Mitz (1985) and Long, Kahn, and Schutz, (1992) write that multi-factor research is necessary when a number of independent variables are implicated in an outcome, because without combining them, the relative explanatory power of the different independent variables cannot be known, and also no interactions between variables can be tested. Also, Dewe and Trenberth (2004) claim that the best way to make coping research more clinically relevant, is to use transactional frameworks, especially if the gap between theory and practice in stress research is to be bridged.

Given the increasing number and intensity of psychosocial stressors in today's working environments, and the organisational and individual problems these can cause, it is

important to carry out more research into the most ecologically valid and balanced theoretical approaches that take account of a range of important job characteristics and individual difference variables.

In the field of occupational stress, stress models could be divided in different types - for example those that mainly focus on job characteristics, such as the DCS and DSS models, those that include a role for subjective perceptions of stressors, such as the Michigan and P-E fit models, and models such as the ERI that combine both of these features. There are the models that focus on the psychological processes that may occur in stressful interactions, such as the transactional models of Folkman and Lazarus (1981) and Cox (1987). Finally there are models that try and combine aspects of the above models, such as the DISC, JD-R and DRIVE models. While the possible influence of Individual Differences (IDs) is implicit in models that treat stressors as subjective (such as the ERI model and others) very few models actually have an explicit role for individual difference factors integrated into them. The ERI model has the ID factor of intrinsic effort, but this factor is specific and its influence on subjective perceptions is not specified. The theories of Folkman and Lazarus (1980) and Cox (1987) pay specific attention to the individual difference factor of coping styles, new research on the JD-R model includes a role for self-esteem, efficacy, and optimism and the DRIVE (Demand-Resources-Individual effects, Smith & Mark, 2008) model tries to account for the role of important individual difference factors in the development of subjective experiences of stress, and in influencing the possible health-related outcomes that result from subjective stressful perceptions (see next section).

In other models an explicit role for ID factors is uncommon. This is despite the fact that much research points to a strong effect of many ID variables in the stress process. Various

types of individual difference variables can be important in the stress process. Parkes (1994) states that individual differences in personality and coping can play major roles in the processes by which psychosocial work conditions influence mental and physical health outcomes (and therefore organizational health) and she argued that more research into individual differences must be carried out to clarify their effects in predicting stress, and to implement person and environment focused interventions. Briner, Harris, and Daniels (2004) state that individual contexts and behaviour are vital to understand the causes of strain, stress, and coping and that it may make no sense to consider stressful job characteristics as "out there" without subjective individual perceptions taken into account.

Individual differences affect our perceptions and interpretations of events around us. They contribute to our experience of stress (primary appraisal), and our decisions what to do to deal with the stressor – our choice of coping process (secondary appraisal) (Moran, 1998). As Lu et al. (2003) explain, massive individual differences in vulnerability to stress alter an individual's perception of a potential source of stress (direct effect), impact on the transformation of perceived stress into various consequences of stress (indirect effect), and ameliorate these stress consequences (direct effect).

The personality variables that have been linked to stress include locus of control, self-esteem, type A behavior pattern, hardiness, and negative affectivity (Schaubroeck, 1999; Lind & Otte, 1994; Murphy, 1995). Demographic variables that are proven to relate to someone's job stressor/health relationships include gender, age, marital status, job tenure, job title, and hierarchical level (Dua, 1994; Lind & Otte, 1994; Murphy, 1995), among which gender, age and hierarchical level were found to be the most significant, as further explanations reveal.

There is little research that considers ethnicity as a demographic variable that is proven to relate to someone's job stressor/health relationships because this dimension is very complex and confounding (see section 2.9.4).

Unlike the consideration of specific combinations of small numbers of occupational stressors, individual differences and their health and performance effects, some researchers have looked more generally at the sum total of the stressors an individual is exposed to in the workplace. A group of researchers based in Israel (Melamed, Luz, & Green, 1990; Melamed, Yekutieli, Froom, Kristal-Boneh & Ribak, 1999) developed an instrument called the Ergonomic Stress Level (ESL) measure. This was used to measure: body motion and posture, physical effort, active hazards and environmental stressors in the workplace using a mixture of self-reports and expert ratings. Using this it was demonstrated that there was a linear relationship between the ESL measure and accident incidence (Melamed et al., 1990).

There have been other studies that have tried to look at the combination of physical and psychosocial stressors. Li, Chen, Wu and Sung (2000) developed novel measures of the frequency of workplace exposure to stressors. This was developed for workers in the Taiwanese petrochemical industry and the aim was to assess occupational injury risk. These measures included items that asked about the physical environment, organisational structure and organisational climate. The findings suggested that the frequency and severity of stressors were associated with an increased likelihood of (non-fatal) injuries occurring in the workplace. Matthews and Gump (2002) looked at post trial mortality from coronary heart disease in 12,336 working men followed-up over 9 years. As the number of reported different workplace stressors increased, the risk of mortality increased significantly, and this trend was linear. Another outcome that has been studied is musculoskeletal disorders (Devereux, Vlachonikolis & Buckle, 2002); the researchers

investigated the combined effects of physical and psychosocial factors on these outcomes. It was found that individuals who reported high levels of both physical and psychosocial factors were more likely to also report symptoms of musculoskeletal disorders. It has been suggested that there can be considerable covariation between physical and psychosocial stressors (MacDonald, Karasek, Punnett & Scharf, 2001). The authors had been studying the aetiology of work-related musculoskeletal disorders but felt this may well apply to other outcomes. Another study that suggests a need to address the effects of physical and psychosocial stressors in combination is that of Tafalla and Evans (1997). They found that noise exposure increased heart rate, norepinephrine and cortisol only under conditions of high effort; reaction time was found to be slowed significantly under noise, only when effort was low. Another study conducted by Smith, McNamara, Wellens, 2004 on two large-scale (i.e. N > 4000) community samples: the Bristol Stress and Health at Work study and the South Wales Health, Work and Safety study investigates the impact of combinations of workplace factors on health and safety. The results showed that a measure of exposure to combinations of workplace factors (the Negative Occupational Factors Score) was associated with a number of health and safety outcomes, many of which were consistent across different industry sectors. Therefore individual differences could be very important in the stress models to promote health in work environment and some combinations of workplace factors (stressors and individual differences) could be useful to focus directly on the risk of exposure on psychological and physical distress before developing a specific kind of intervention.

5.6 The Demand-Resources-Individual Effects Model

On this basis of the issues presented above the Demand-Resources- Individual effects (DRIVE) Model (Mark & Smith, 2008) describes the important role played by psychosocial workplace stressors in the stress process, and tries to account for the role of important individual difference factors in the development of subjective experiences of stress, and in influencing the possible health-related outcomes that result from subjective stressful perceptions. Mark (2008) developed and tested the model which simultaneously compared a number of job characteristics and individual difference variables in the prediction of anxiety, depression, and job satisfaction, in a working population. Independent variables included: job demands, social support, decision authority, and skill discretion from the DCS model; extrinsic effort, intrinsic effort and rewards from the ERI model; coping behaviours (a key feature of the transactional models) which included the categories of problem focused coping, seeking advice, self-blame, wishful thinking, and escape/avoidance; attributional/explanatory styles; and age, gender, and demographic variables. In the model workplace and individual characteristics are conceived of in terms of work demands and resources, and individual demands and resources. Other work demands and resources could include workload, bullying, job security, management style, feedback etc, and other personal demands and resources could include self-efficacy, locus of control, personality, home environment, experience, work/life balance, role conflict, etc. The model proposes that work demands, individual differences, and work resources all have main effect relationships on anxiety, depression, and job satisfaction (other outcomes could include organizational commitment, musculoskeletal disorders, gastro-intestinal disorders, heart disease, absence etc). It is also proposed that work resources and individual differences may moderate the relationship between work

demands and health outcomes. The individual difference variables of positive coping (problem focused coping, etc) and attributional styles can be seen as personal resources, and intrinsic effort, negative coping (self-blame, etc) and attributions as "personal demands", as maladaptive behaviours are effectively self-induced demands. This model makes no predictions about the "importance" of the different variables in predicting outcomes, and gives each type of variable (work and individual demands and resources) a theoretical equivalency.

Despite being more complex than the DCS, DSS, and ERI models, the model represents the complexities of the workplace-individual stress process in one key way. Although hypothesising possible individual effects in the relationship between environment and outcome, this process is described without reference to conscious or affective perceptions of psychosocial stressors, a process which is specified in the appraisal stages of transactional models. While it is implicit in the model that individuals may not view "stressors" as stressful, this subjective process is buried in the pathway between environment and outcome. The model could therefore benefit from some way of representing how individuals subjectively feel about their exposure to potential psychosocial stressors (the presence of which is also subjectively measured). However, there is a major change with the inclusion of a "perceived job stress" variable. It is proposed that this variable is measured simply by asking an individual if they feel that their work makes them feel stressed - whatever that may mean to the individual. Such a measure has been shown to be an accurate indicator of perceived stress, which measures this construct as well as many longer questionnaires (Smith, Johal, Wadsworth, Davey, Smith, & Peters, 2000). Perceived job stress is proposed to mediate the relationship between work demands/work resources and health outcomes. Perceived stress is hypothesised to be the mechanism by which levels of workplace psychosocial demands and resources can affect health outcomes. In other words, a

psychosocial stressor will not transmit any stressful potential to lead to negative health outcomes, if the person does not perceive their work conditions to be stressful. Further, it is proposed that individual differences can not only moderate the relationship between environmental factors and perceived stress, but that they can also moderate the relationship between perceived stress and health outcomes. Likewise, individual differences (personal demands and resources) are proposed to have independent main effects on perceived job stress and health outcomes (Mark & Smith, 2012a, 2012b).

Twelve key relationships are proposed in the model.

1) Work demands and work resources will significantly relate to outcomes.

2) Work demands and resources will significantly relate to perceived job stress.

3) Level of perceived job stress will significantly relate to outcomes.

4) Level of perceived job stress will significantly mediate the relationships between Job Demands/Resources and outcomes.

5) Work resources will significantly moderate the effect of work demands in the prediction of perceived job stress.

6) Work resources will significantly moderate the effect of work demands in the prediction of health outcomes.

7) Job resources will significantly moderate the effect of perceived job stress in the prediction of health outcomes.

8) Individual differences in the form of personal demands and resources will be significantly related to perceived job stress.

9) Individual differences will be significantly related to outcomes.

10) Individual differences will moderate the effect of job demands on perceived stress.

11) Individual differences will moderate the effect of job demands on outcomes.

12) Individual differences will moderate the effect of perceived stress on outcomes.

5.7.1 Mediators and Moderators

Payne (1988) proposed the following research questions on the influence of individual differences in the stress process:

1) "Do individual differences play a role in selecting individuals into jobs which differ in stressfulness?"

2) "How do individual differences relate to the development of symptoms of psychological strain?"

3) "How do individual differences relate to perceptions of stress in the environment?"

4) "Do they act as moderators of the stress-strain relationship?"

5) "Do they affect the way people cope with stress?"

Cox and Ferguson (1991) suggest that Payne's last three questions reflect two types of research in work stress, namely, which individual differences are "components or *mediators* of stress appraisal" and/or which are "*moderators* of the stress-outcome relationship". Mediators are variables that transmit an effect, but do not qualitatively change the effect (Baron & Kenny, 1986). For example Nolen-Hoeksema, Morrow, and Fredrickson (1993) have argued the mechanism by which stress leads to negative affective responses is mediated by rumination, so that those who are stressed are more likely to ruminate, and it is rumination that leads to greater negative feelings and in turn perceptions. Therefore mediation (in this case by rumination) could be a process by which physical events or job characteristics are invested with meaning and gain psychological value or relevance. Mediation is a process that Cox and Ferguson (1991) believe is related to the primary appraisal stage of transactional stress models. The other process that Cox and Ferguson (1991) mention is important in stress research related to individual differences is that of moderation. Moderators are variables that change the direction or strength of a relationship

between other variables, or determine when certain responses to stress will occur (Cox & Ferguson, 1991). Specific moderating effects may include buffering or interactive effects, and many ID variables are hypothesized to moderate the relationship between stressors and health outcomes. For example, when faced with a perception that an environmental demand is stressful or threatening, an individual who uses adaptive coping behaviors or other personal resources may be able to "cope" or modify the stressful feelings or perceptions to result in positive or non-harmful health outcomes (Cox and Ferguson, 1991). Cox and Ferguson (1991) propose that these processes may occur during secondary appraisal or coping stages of transactional models.

Semmer (2003) suggests that ID variables *should* act as moderators between stress and outcome variables, and while such findings are often found, they are not found as often as theory would predict.

To further complicate the possible effects of mediation and moderation in the stress process, other authors have also stated that moderating effects can occur between environmental stressors and perceptions of those stressors (Spector, 2003). For example, not only could positive ways of coping turn a stressful perception into a non - damaging outcome (i.e. a moderating effect as already described) positive coping could also moderate a stressful "objective" job event, to make the individuals' perceptions of it non-stressful. However, Spector (2003) maintains that there have been few good tests of this particular moderator hypothesis. There are many individual difference factors that have been studied in work stress and depression research, and the next section discusses in more detail, type A personality, Negative Affectivity (Watson and Clark, 1984), and the complex cultural variables (Acculturation, Ethnic Identity, Discrimination) that could be considered as Individual differences or sources of stress and their ambiguous role of mediators or moderator factors in stress process.

5.7.2 Type A behavior

The Type A behavior-personality complex was developed over the last 30 years from research to identify risk factors for coronary heart disease. During this time evidence has accumulated which links Type A behavior patterns to an increased risk of coronary disease (Rosenmann, 1991). Minor health complaints have also been associated with Type A behavior. For example, Keinan and Melamed (1987) report an association of Type A behavior with burnout symptoms. Characteristic Type A behaviors include competitiveness, hostility, ambition, achievement-striving, impatience and time urgency (Rhodewalt et al., 1991). However there is some debate about the structure of the Type A behavior pattern (Edwards, Baglioni and Cooper, 1990; Ivancevich and Matteson, 1988), and which Type A dimensions are responsible for the observed health risks. In particular, factor analytical studies (Spence et al., 1987) support a two factor model of impatience-irritability (including trait anger, hostility and time urgency) versus achievement-striving (incorporating ambition and competitiveness). Although achievement-striving is linked with good performance (Bluen et al., 1990), measures of the impatience-irritability dimension are associated with physiological reactivity (Ganster, Schaubroeck, Sime and Mayes, 1991), physical complaints (Spence et al., 1987), depression (Bluen et al., 1990) job dissatisfaction (Bluen et al., 1990) and anxiety (Lee et al, 1993). Following a Person-Environment Fit theory of stress, it has been suggested that Type A personality characteristics will be particularly detrimental in some work environments. Frankenhauser, Lundberg and Forsman (1979) reported that while Type B was physiologically aroused during strenuous mental work,

Type A was more aroused during periods of inactivity. Ivancevich and Matteson (1984) propose that the optimal work environment for a Type A individual is one which is

controllable, fast-paced and challenging, and that negative consequences arise when Type A individuals are placed in environments which differ from this optimum.

Type A persons have been shown to use control as their major strategy for coping with stressful work situations (Greenglass and Burke, 1999). It is therefore thought that Type A will suffer more adverse effects than Type B in a work environment where opportunities for successful control are restricted (Chesney, Sevelius, Black, Ward, Swan and Rosenmann, 1981; Glass, 1972; Kushnir and Melamed, 1991; Rhodewalt, et al., 1991). For example, Lee and Ashford (1996) examined the interaction between Type A characteristics and control: Type As in conditions of high control performed better and had higher satisfaction than those in low control conditions. In his review, Syme (1989) suggested that people exhibiting Type A behaviour may have higher rates of coronary disease because of their continued but unsuccessful efforts to control events in their lives.

Other researchers have separated the motivation for control from the rest of the Type A Behavior Pattern. Greenberger and Strasser (1986) proposed a model of the stress process based on perceived and desired levels of control. Where these control dimensions are mismatched, an individual is motivated to restore equilibrium: if these attempts are congruent with organizational goals, then productivity is enhanced.

However, if equilibrium cannot be reached, learned helplessness will result (Seligman et al., 1979). Therefore a failure to recognize an individual's need for control can lead to dysfunctional behavior. Similarly, Burger and Cooper (1979) developed an individual difference measure for general level of motivation to control events in one's life. People high on this construct demonstrated greater "illusion of control" in a laboratory setting reacted poorly to uncontrollable events, with greater learned helplessness. On the other hand, Parkes et al. (1990) found that individuals who have a preference for *low*

control, showed poorer performance and increased arousal on a self-paced letter-sorting task, relative to machine pacing.

5.7.3Neuroticism, Negative Affectivity

Negative affectivity (NA), of which neuroticism is one recommended measure (Watson and Clark, 1984), is the extent to which an individual tends to be worried, anxious, pessimistic or moody. The most common reference to NA in the stress literature is as the cause of a response bias in self-report scales, which may result in spurious correlations between measures (e.g. Brief et al., 1988; Watson and Clark, 1984).

Several researchers have shown that individuals scoring high on a measure of neuroticism also report high levels of somatic and psychological symptoms (e.g. Goldberg, 1972; Keinan & Melamed, 1987). This finding can either be interpreted as evidence of a general response style contaminating self-report measures of well-being, or as evidence of a direct effect of the trait NA on health outcomes.

Furthermore, it has been suggested that NA may moderate the impact of work demands, such that it acts as a vulnerability factor for strain outcomes (Parkes, 1990), or may operate through mediated pathways (Levin and Stokes, 1989; Spector, 1994; Terry et al., 1993). For this reason in the present research NA is considered in terms of personality behavior as independent variable giving close attention to not confound it with the mental health outcomes.

5.8 Ethnicity in the stress models

As reported in these previous chapters, Ethnicity and Culture represent a novel topic because there has been little consideration in studies of work stress and in the models of

stress. As the terms culture and ethnicity have many definitions drawn from disciplines such as anthropology, psychology and sociology, it is generally agreed that the construct is multi-faceted and interconnected and this offers researchers a difficult challenge.

Therefore in the work stress models it could be important to consider each aspect of the ethnicity dimension in order to provide evidence for the importance of this variable in workplace and in the promotion of wellbeing at work.

Findings from the previous chapters have confirmed that ethnicity is not only a descriptor of the population studied but also an individual difference or a potential source of stress and it could be considered as a moderator or mediator in the relationships with health outcomes and appraisals. These findings, the previous research on ethnicity and occupational health in migrant workers and the gap in the literature on cultural dimensions and stress at work are the basis of debating on the role of culture in the work stress models and support our proposal of model of stress.

5.9 Summary

After describing the major theoretical models of stress and work related stress to understand how Ethnicity should be considered in this specific area in accordance with findings reported in the previous chapters and the literature in the next chapter we try to evaluate the associations between the dimensions involved in the occupational stress models such as individual differences, work characteristics, appraisals and health outcomes in the sample as whole. We give closer attention to including the cultural dimensions in order to propose and to test a model of stress that integrates Ethnicity and work related aspects in a transactional perspective.

Chapter 6: A proposal of Ethnicity and work related stress model: individual differences, work characteristics, ethnicity dimensions, appraisals and health outcomes

6.1 Introduction

The possible role of the culture in the work related stress models has been reported in the chapter 5. In this chapter a proposal of an Ethnicity and work related stress model is described and the associations between individual differences, work characteristics, ethnicity dimensions, appraisals and health outcomes for the whole sample is investigated.

On the basis of the literature on stress models, the specific research on migrant workers and the results reported in the previous chapters a transactional model of stress has been formulated which simultaneously compares a number of job characteristics, individual differences, ethnicity dimensions and appraisals in association with psychophysical health conditions in migrant and Italian workers. This model can be seen in the next sections and testing it formed the basis for the research.

The methodology involved different types of statistical analyses including correlations, factor analyses, chi square analyses, logistic regression analyses and univariate ANOVAs. The results from this part of the study have confirmed the main effects predicted by the model and few interaction effects in the prediction of psychophysical disorders.

These findings introduce the next chapter in which the proposed model was applied in each ethnic group separately and the different profiles of associations were evaluated in more detail.

6.2.1 The Demand-Resources-Individual Effects Model: framework of reference

On this basis of the issues presented in the previous chapter the Demand-Resources-Individual effects (DRIVE) Model (Mark & Smith, 2008) was considered as a framework of reference for our proposal of model.

The key relationships that our proposed model of Ethnicity and work related stress takes a cue from the DRIVE model are the following outlined in Mark and Smith (2008, 2012a, 2012b).

1) Work demands and work resources will significantly relate to outcomes.

2) Work demands and resources will significantly relate to perceived job stress.

3) Level of perceived job stress will significantly relate to outcomes.

4) Individual differences in the form of personal demands and resources will be significantly related to perceived job stress.

5) Individual differences will be significantly related to outcomes.

Therefore the proposed Ethnicity and work related stress model tries to investigate whether some interaction effects might be significant in the model giving closer attention to the controversial relationships between the meaning and the statistical application of the terms "moderator" and "mediator".

6.2.2 A proposed Ethnicity and work-stress model

The suggested model of Ethnicity and work stress (taking a cue from the DRIVE model) would combine aspects of traditional job stress models (the DCS and ERI) with individual differences in the forms of coping styles and personality behaviours, appraisals (job satisfaction/stress) and all the ethnicity variables in the prediction of psychophysical health outcomes.

On this basis of the literature and the results reported in the previous chapters our suggested model takes as point of reference the possible role of Ethnicity in the stress model and its combinations with individual differences, job characteristics and appraisals in the prediction of psychophysical outcomes.

In accordance with the literature on stress and wellbeing at work, ethnicity and stress at work have received little coverage and one of the major problems with the limited previous research on ethnicity and occupational health is that it has failed to consider important issues related to cultural dimensions such as acculturation strategy, cultural identity and perceived discrimination and their potential role in a transactional model of stress.

Therefore, in chapter 2 the potential problems of conceptualising and measuring ethnicity and the literature on ethnicity and occupational mental health, occupational physical health and work stress were described.

Moreover, after analysing the preliminary associations between Ethnicity dimensions and health outcomes, appraisals and work characteristics in our sample (chapters 3 and 4), in chapter 5 the major theoretical models of stress and work-related stress were described in order to give a role to Ethnicity dimensions in this specific research area. In accordance with the literature on stress and wellbeing at work, chapter 5 focused on the important role played by individual differences and appraisals (perceived job satisfaction/stress) in the stress process, with reference to interaction and combined effects. Then Ethnicity and all its aspects seem to be variables that could be considered in the stress models as an individual difference or as a potential source of stress.

The review of the literature and the findings from the preliminary analyses suggested that in a sample of workers varying in ethnicity individual differences and subjective perceptions play an important role and in addition that some of work conditions that they face may be explained by the sectors and occupations where they are employed and not only for the fact

of being migrants. Moreover all the main aspects of ethnicity such as acculturation, racial discrimination and ethnic identity are relevant in relationship with occupational health and ethnicity is proposed not only as a descriptor but also as an individual difference or a potential source of pressure in the stress models.

However before showing the suggested model integrated with the Ethnicity dimensions we describe a preliminary model (see figure 1 below) that has similar basic principles to the DRIVE model. All the dimensions involved, namely individual differences, work characteristics, appraisals and ethnicity (independent variables) will be evaluated before integrating with the ethnicity dimensions.

Figure 6.1: Work stress model: Preliminary model
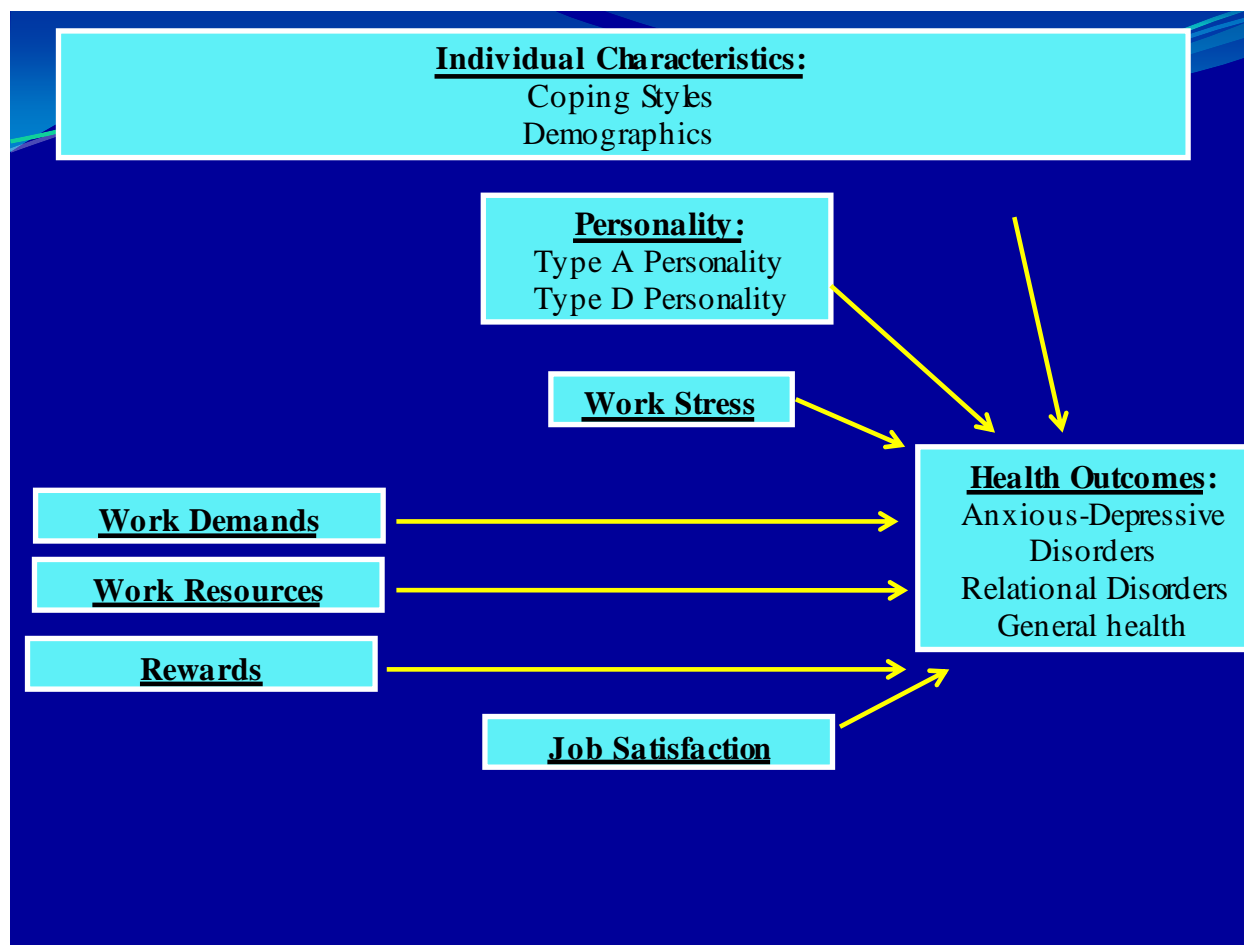
——→ Main Effect

The above figure shows that work demands, individual differences and personality behavioural patterns, work resources/rewards and appraisals (perceived job satisfaction/stress) are all proposed to have main effects on anxious-depressive symptoms, relational disorders and physical problems (see appendix 6.1 logistic regression analyses).

It is also proposed that the effects of work demands and work resources/rewards on health outcomes could be independent or combined.

Therefore after testing the main effects of the independent variables, on the basis of the literature, the results reported in the previous chapters and these preliminary analyses related to the preliminary model (figure 1 above), we proposed the integration with the ethnicity dimensions and testing our suggested model in the whole sample. There are some specific changes with the inclusion of the ethnicity variables in terms of nationality/job, affirmation/maintenance culture, search identity/adoption of the host culture and perceived racial discrimination. It is proposed that these variables are measured by Phinney's Multigroup Ethnic Identity Measure (MEIM, 1992), Berry's Schema (1997) and single item reported discrimination at work on the basis of race or ethnicity.

It is also proposed that the effects of work demands and work resources/rewards on health outcomes could be independent or combined.

As shown in the suggested Ethnicity and Work-related stress model in figure 6.2 below in addition to the effects reported in the preliminary model; perceived racial discrimination and some specific acculturation/cultural identity behaviours may show main and interaction effects on anxious-depressive and relational disorders and physical problems.

Figure 6.2: Ethnicity-Work stress model

Individual Characteristics:
Coping Styles
Demographics
Nationality, Types of job
Ethnicity dimensions (Acculturation Strategies, Cultural Identity)

Personality:
Type A Personality
Type D Personality

Work Stress

Work Demands

Work Resources

Rewards

Job Satisfaction

Discrimination

Health Outcomes:
Anxious-Depressive
Disorders
Relational Disorders
General health

→ , → Interaction effect
→ Main Effect

Moreover in accordance with DRIVE model hypotheses the two variables of perceived job satisfaction/stress will be considered not only as independent variables in the prediction of psychophysical health outcomes but they have particular role in work environment. For this reason our hypotheses will consider also the main effects of all the factors proposed by the model on perceived job satisfaction (as an outcome) as well as the individual differences and psychosocial job characteristics that could influence the perception of job stress (see figures 6.3 and 6.4 below).

Figure 6.3: All the factors on perceived job satisfaction
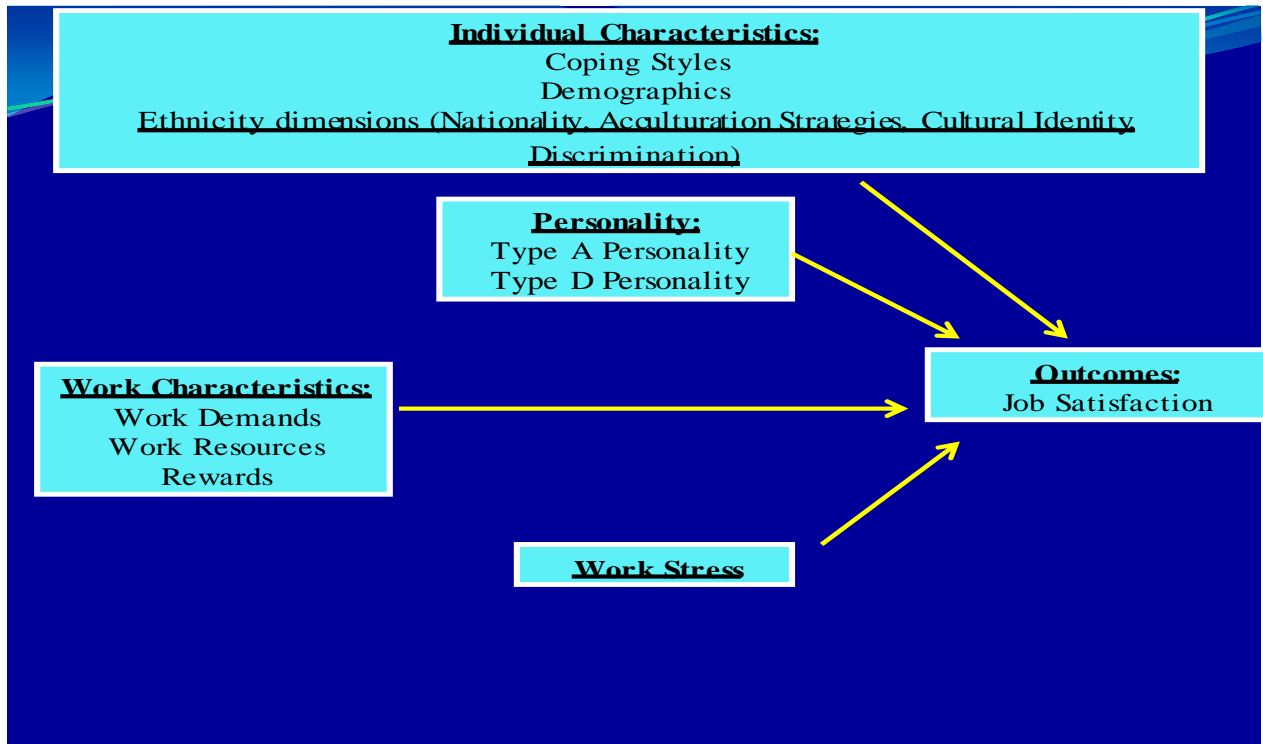
Figure 6.4: All the factors on perceived job stress
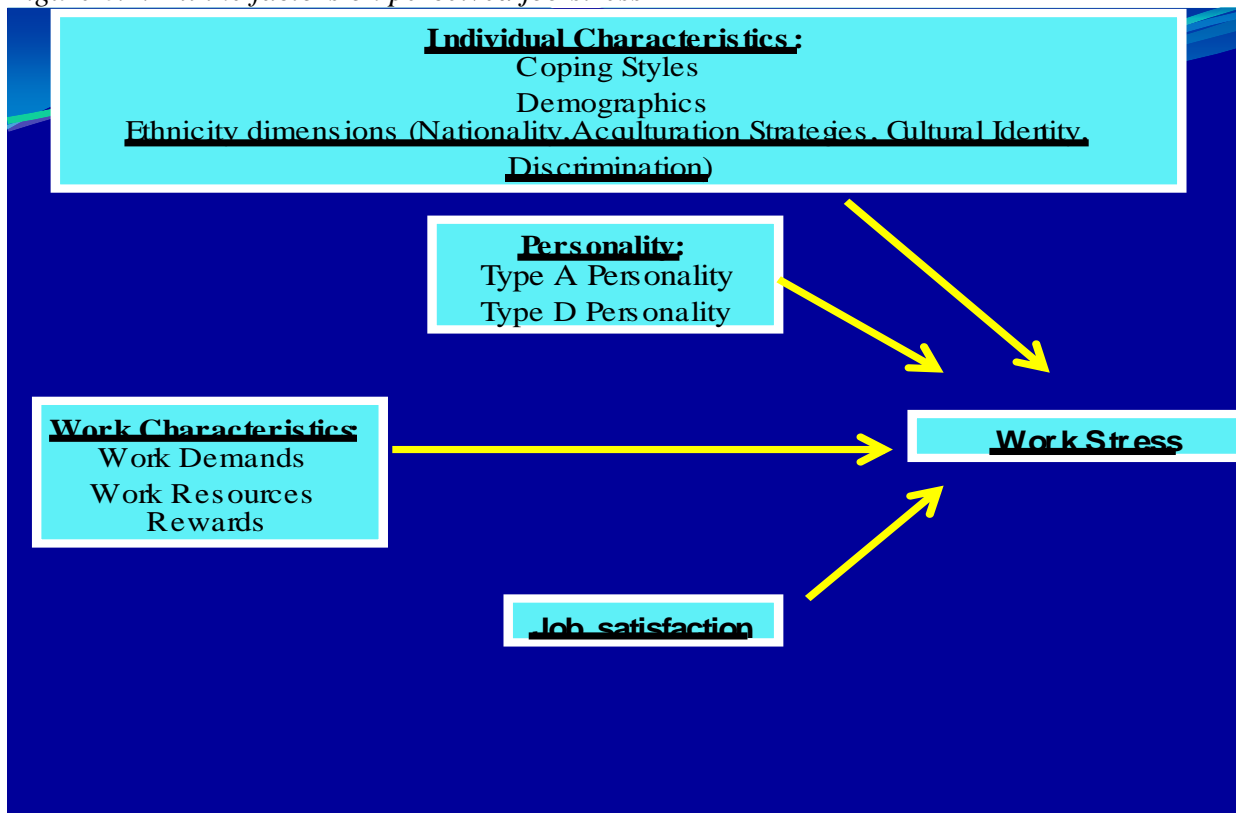
The above model was tested using a large number of statistical calculations including correlations, factor analyses, crosstabulations, chi square analyses, logistic regression and ANOVAs.

Finally the next section will describe the hypotheses based on the proposed relationships between variables in the model. All the dimensions involved in this model as individual differences, work characteristics, appraisals and ethnicity dimensions will be analysed in more detail for the whole sample to test the hypotheses and to get a final draft of the model.

6.2.3 Hypotheses

Hypothesis one:

The experimental hypothesis predicts that the negative influence of job characteristics on psychophysical health conditions and perceived job satisfaction/stress would be greatest in combination with individual characteristics and ethnicity dimensions for the whole sample. Moreover the negative influence of job characteristics on psychophysical health conditions would be greatest including perceived job satisfaction/stress (appraisals) in combination with individual characteristics and ethnicity dimensions.

Hypothesis two:

The experimental hypothesis predicts that there will be significant different profiles of associations between individual differences, work characteristics, ethnicity dimensions, perceived job satisfaction/stress and health outcomes.

In particular the influence of individual differences, psychosocial job characteristics and cultural dimensions will be associated with perceived job satisfaction/stress.

Moreover in the prediction of psychophysical health outcomes, negative coping and personality behaviours, work demands, racial discrimination, specific acculturation strategies and perceived work stress will be associated with high levels of anxious-depressive disorders, relational disorders and physical problems.

Work resources and rewards, positive coping, specific acculturation strategies and perceived job satisfaction will be associated with low levels of psychophysical disorders.

Hypothesis three:

The experimental hypothesis predicts that there would be significant interaction effects of work demands and work resources/rewards, ethnicity dimensions on health outcomes.

6.3 Sample and Materials

Sample and Materials have been shown in the previous chapters (see sections 3.3 and 3.4).

Table 6.1: Summary of measures used in the main study

Cultural dimensions	Ethnic group Phinney's Multigroup Ethnic Identity Measure (MEIM, 1992), Berry's Schema (1997), Racial discrimination (single factor reporting discrimination on the basis of race or ethnicity)
Work characteristics	Job Content Questionnaire (JCQ; Karasek, 1985), Effort-Reward Imbalance test (Siegrist, 1996)
Individual Characteristics	Coping Style Inventory (Cooper, Sloan,& Williams, 1988), Bortner's Type A Behavioural Style Inventory (Bortner, 1969), Type D Personality (Denollet, 2005)
Health outcomes	Symptom Checklist 90 R (SCL-90-R, Derogatis, 1994), Single item asking "Over the past 12 months, how would you say your general health has been?"
Appraisals (Perceived job stress, Perceived job satisfaction)	Perceived job stress (single item asking "In general, how do you find your job?"). Job Satisfaction Scale (Warr, Cook & Wall, 1979)
Demographics	Age Employment

6.4 Data Analyses

The following statistical analyses were carried out using SPSS-X (for Pearson correlations and Factor analyses of Work characteristics, Appraisals, Cultural dimensions and Health outcomes see chapter 3 section 3.6 and chapter 4 section 4.5) for the whole sample:

a) Pearson Correlations between the subscales for Individual characteristics;

b) Factor Analyses (Principal component analysis, Method: Varimax, communalities > .35, parallel analyses, scree test, eigenvalue > 1, item factor loadings > .30) of all the subscales for Individual characteristics;

c) Pearson Correlations between factor scores extracted;

d) Descriptive statistics (Frequencies and Percentages) for gender, age, ethnicity, marital status, education, type of job, work status, type of contract;

e) Multi-variable associations of Negative Occupational Cultural Factors score (NOCF Score components) with psychophysical health outcomes and perceived job/satisfaction stress. Multi-variable associations between NOCAF (including appraisals in the Total score) and psychophysical health outcomes;

f) Associations between psychophysical health outcomes and independent variables (Individual characteristics, Work characteristics, Ethnicity dimensions, Appraisals) assessed using cross-tabulations and chi-square analyses;

g) Multi-variable associations (Logistic regression analysis, Method: Forward LR, First indicator contrast) between perceived job satisfaction/stress and independent variables and between psychophysical health outcomes and independent and interaction variables considering the large number of variables, with $P < 0.05$ as the entry criterion and $P > 0.10$ as the removal criterion and the Hosmer and Lemeshow Goodness-of-Fit statistic fixed at $P > 0.05$;

h) Univariable associations of independent variables (Work demands, Work resources/Rewards, Coping strategies, Ethnicity dimensions and Appraisals as "fixed factors") with Health outcomes (dependent variables) for the whole sample (General linear model, Analysis of Variance, ANOVA).

6.5 Preliminary Statistical Analyses. Selection of the individual differences factors

Correlations between subscales for Individual characteristics were run to check the significant associations before the Principal component analyses (see Appendix 6.2).

Then PCA of the subscales for Individual characteristics reduced the huge numbers of variables. Tables 6.2, 6.3 and 6.4 below show the components extracted as coping styles and personality behaviours.

Table 6.2: Factor analysis of coping strategies: loadings and variance explained

	Components	
	1	2
Involvement	**.823**	.001
Home-work relationships	**.761**	-.050
Social Support	**.602**	.252
Time management	**.549**	.306
Logic	.004	**.892**
Task strategies	.202	**.866**
% Variance explained	38.518	22.586
Eigenvalue	2.311	1.355

The final 6 subscales gave a scale with two distinct components which could be designated:

Emotional/Relational coping and Objective coping

Table 6.3: Factor analysis of Type A personality characteristics: loadings and variance explained

	Components
	1
Time Conscious Behaviour	**.718**
Emotional Suppressive/Ambitious-Competitive Behaviour	**.631**
Efficient Behaviour	**.955**
% Variance explained	39.298
Eigenvalue	2.815

The final 3 subscales gave a scale with only one component which could be designated: Total

Type A behaviour.

Table 6.4: Factor analysis of Type D personality characteristics: loadings and variance explained

	Components	
	1	2
Negative Affectivity	**.990**	.139
Social Inhibition	.139	**.990**
% Variance explained	63.786	36.214
Eigenvalue	1.785	1.276

The final 2 subscales gave a scale with two distinct components which could be designated:

Negative affectivity and Social inhibition.

Summary of factors extracted

Emotional/Relational coping, Objective coping. Total Type A behaviour, Negative affectivity, Social inhibition	Individual differences

Finally, correlations between factors scores were run to get a profile of the significant

associations of the new variables.

Before analysing all the results, the table below shows a summary of all the factors extracted

for the study.

Summary of all the factors extracted used in the next analyses

		Parameter coding	N	Recode
Nationality and job type	Nationality/Jobs	Italian masons=1	100	
		Eastern European care workers=2	250	
		Moroccan factory workers=3	250	
		Ghanaian masons=4	200	
		Italian factory workers=5	100	
Ethnicity	Italian/Not Italian	Italian=1	200	
		Not Italian=2	700	
Work characteristics	Work demands	Low=1	448	
		High=2	448	
	Intrinsic/Extrinsic Rewards	Low=1	448	
		High=2	448	
	Work resources	Low=1	449	
		High=2	447	
Individual differences	Emotional-relational coping	Low=1	458	
		High=2	438	
	Objective coping	Low=1	453	
		High=2	443	
	Type A behavior	Low=1	450	
		High=2	446	
	Negative affectivity	Low=1	405	
		High=2	491	
	Social inhibition	Low=1	439	
		High=2	457	
Appraisals	Perceived job satisfaction	Low=1	433	
		High=2	463	
	Perceived job stress	Low=1	517	
		High=2	379	
Cultural dimensions	Perceived racial discrimination at work	Missing	200	Missing=1 (Italians)
		Not reported=1	268	1=2 Not reported
		Reported=2	432	2=3 Reported
	Affirmation/Maintenance culture	Missing	200	Missing=1 (Italians)
		Low=1	350	1=2 Low
		High=2	346	2=3 High
	Search Identity/Adoption of the host culture	Missing	200	Missing=1 (Italians)
		Low=1	351	1=2 Low
		High=2	345	2=3 High
Psychophysical health	Anxious-Depressive disorders	Low=1	448	
		High=2	449	
	Relational disorders	Low=1	449	
		High=2	448	
	General Health	Low=1	512	
		High=2	367	

In terms of interaction variables considered in the model, looking the literature review in chapter 5 we give closer attention to some potential interesting interaction effects. In accordance with Karasek and Siegrist models both job control and social support (work resources) and rewards may influence the effects of job demands on health outcomes as well as the individual difference variables and cultural dimensions (Cox & Ferguson, 1991) and the perceived job stress (Mark and Smith, 2008). Considering the cultural dimensions, perceived racial discrimination at work may influence the negative effects of potentially hazardous environmental stimuli (as reported in literature review in chapter 5 and 2). Therefore before running the logistic regression analyses on the psychophysical health outcomes we selected these notable factors that the literature suggested as being associated with work demands in the prediction of the health outcomes and only the significant interaction variables were chosen and included in the final model (section 6.7.3).

6.6 Results

6.6.1Descriptive Statistics

Table 6.5 below shows the descriptive statistics for gender, age, ethnicity, education, type of job, work status and type of contract for the whole sample.

Table 6.5: Descriptive statistics of the whole sample (Age Mean= 41.40; SD= 4. 10)

Descriptives	N	%
Gender		
Female	275	21.6
Male	625	69.4
Ethnicity		
Italian	200	22.2
East Europe	250	27.8
Morocco	250	27.8
Ghana	200	22.2
Marital Status		
Married	860	95.5
Unmarried	40	4.5
Type of Job		
Eldercare	250	27.7
Factory worker	350	38.8
Masons	300	33.3
Education		
Primary School	12	1.3
Middle School	426	47.3
High School	452	50.1
Degree	10	1.3
Work Status		
Part-time	563	62.6
Full-time	337	37.4
Contract type		
Permanent contract	84	9.4
Fixed term contract	434	48.2
Temporary/casual	382	42.4

Furthermore there were interesting data on high level of reported psychophysical disorders in association with some specific variables involved in the model (Crosstabulations and chi square analyses are reported in appendix 6.3).

In particular it is important to focus on work characteristics and perceived discrimination, therefore 60.6% (*N*=272) of migrant workers with high perception of wok demands reported high levels of Anxious-Depressive disorders, while 51.5% (*N*=282) of migrant workers who had experienced racial discrimination reported high levels of Anxious-Depressive disorders. Moreover 62.1% (*N*=278) of migrant workers with high perception of wok demands reported high levels of Relational disorders and 65.0% (*N*=292) of migrant workers with high perception of rewards reported low levels of Relational disorders, while 53.3%

(*N*=300) of migrant workers who had experienced racial discrimination reported high levels of Relational disorders. Finally with respect to poor general health, it is interesting that 63.0% (*N*=269) of migrant workers with high perception of rewards reported positive general health conditions.

6.6.2 Combined effects and Total score

In accordance with the first hypothesis of this part of the study, the influence of individual differences, psychosocial job characteristics and cultural dimensions on health outcomes was found in this working population.

It was hypothesised that the negative influence of job characteristics on psychophysical health conditions and perceived job satisfaction/stress would be greatest in combination with individual characteristics and ethnicity aspects. This section outlines the calculation of a composite variable designed to encompass a wide range of variables and the pattern of effects subsequently observed on the outcome measures. The influence of stress and job satisfaction was also considered before evaluating in more detail the associations of each factor with the health outcomes.

The new variable designed "Negative Occupational-Cultural Factors Score" was calculated by adding all the following factor scores split at the median (recoded as 0=Good, 1=Bad depending on the type of factor): Work demands, Intrinsic/Extrinsic rewards, Work resources, Emotional/Relational coping, Objective coping, Type A behavior, Social inhibition, Negative affectivity, Perceived racial discrimination. A tertile split (1=low exposure, 2=moderate exposure, 3=high exposure) of this total NOCF exposure variable (ranged 0-9) was preferred to a median split because three level of exposure were more adapted to describe the potential linear effects of the exposure to negative occupational-cultural factors on health outcomes and perceived job satisfaction/stress using logistic

regression analyses. The 'indicator' contrast was used in order that the tabulated odds ratios were compared to the lower tertile, here set as the reference category.

High levels of Work demands, Type A behavior, Social inhibition (Type D), Negative affectivity (Type D), Perceived racial discrimination were associated with increased levels of negative health outcomes (coded as Low=1, High=2). In the computing of the total score the factors Search Identity-Adoption of the host culture and Affirmation-Maintenance culture were excluded because their negative or positive aspects depended on the ethnic group and type of health outcome and it was not possible to generalize for the whole sample. For this reason the cultural dimensions will be reported in the computing of the total score in each ethnic group considering the specific characteristics of the three ethnic minorities.

To compute Total Negative Occupational-Cultural Score these factors were recoded as 1=0 (Good), 2=1(Bad).

		Recoded
Work demands	Low=1	1=0 (Good)
	High=2	2=1 (Bad)
Type A behavior	Low=1	1=0 (Good)
	High=2	2=1 (Bad)
Negative affectivity	Low=1	1=0 (Good)
	High=2	2=1 (Bad)
Social inhibition	Low=1	1=0 (Good)
	High=2	2=1 (Bad)
Perceived discrimination	Low=1	1=0 (Good)
	High=2	2=1 (Bad)

Moreover, high levels of Intrinsic/Extrinsic rewards, Work resources, Emotional/Relational coping, Objective coping were associated with low levels of psychophysical problems (coded as Low=1, High=2).

To compute Total Negative Occupational-Cultural Score these factors were recoded as 2=0 (Good), 1=1 (Bad).

			Recoded
Intrinsic/Extrinsic Rewards	Low=1		2=0(Good)
	High=2		1=1(Bad)
Work resources	Low=1		2=0(Good)
	High=2		1=1(Bad)
Emotional-relational coping	Low=1		2=0(Good)
	High=2		1=1(Bad)
Objective coping	Low=1		2=0(Good)
	High=2		1=1(Bad)

Finally Total Negative Occupational-Cultural Score was the sum of: Work demands, Intrinsic/Extrinsic rewards, Work resources, Emotional/Relational coping, Objective coping, Type A behavior, Social inhibition, Negative affectivity, Perceived discrimination (all the factors were recoded as Good=0, Bad=1, ranged 0-9).

Table 6.6 below shows the effects associated with exposure to Negative Occupational-Cultural Factors Score on perceived job satisfaction and work stress.

Table 6.6: Multi-variable associations of Total Negative Occupational-Cultural Factors Score with perceived job satisfaction and job stress

Outcomes		OR	CI
Perceived job satisfaction	1st tertile	1.00	
	2nd tertile	.990	.478-1.884
	3rd tertile	.572	.302-.982
Perceived job stress	1st tertile	1.00	
	2nd tertile	1.450	.720-2.903
	3rd tertile	2.005	1.002-4.026

The likelihood of reporting perceived job satisfaction decreases where exposure to negative occupational-cultural factors is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels.

Furthermore the likelihood of reporting perceived job stress increases where exposure to negative occupational-cultural factors is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. The small differences in the size of the odds ratios were found at the second and third tertiles for perceived job satisfaction/stress but the effects were linear

because the likelihood of reporting these outcomes increased as a function of level of exposure to negative occupational-cultural factors.

Table 6.7 below shows the effects associated with exposure to Negative Occupational-Cultural Factors Score on Anxious-Depressive disorders, General health and Relational disorders.

Table 6.7: Multivariable associations of Total Negative Occupational-Cultural Factors Score with Anxious-Depressive disorders, General health and Relational disorders

Outcomes		OR	CI
Anxious-Depressive Disorders	1st tertile	1.00	
	2nd tertile	1.278	931-1.756
	3rd tertile	5.246	2.361-10.684
General Health	1st tertile	1.00	
	2nd tertile	1.356	936-1.965
	3rd tertile	2.083	1.034-4.845
Relational Disorders	1st tertile	1.00	
	2nd tertile	1.132	.622-2.147
	3rd tertile	2.972	1.458-6.020

The likelihood of reporting Anxious-Depressive disorders, Relational disorders and poor general health increases where exposure to negative occupational-cultural factors is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. Then differences in the size of the odds ratios were found at the 2nd and 3rd tertiles (for anxious-depressive disorders were significant) and Anxious-Depressive disorders, Relational disorders and poor general health were more likely at the 2nd and 3rd tertiles.

The effects were linear because likelihood of reporting these health outcomes increased as a function of level of exposure to negative occupational-cultural factors.

These findings showed that for this working population the likelihood of suffering Anxious-Depressive disorders was higher than the other two health conditions (at the 3rd tertile) in accordance with most studies reporting on depression (Madianos, Economou, Alexiou,

Stefanis, 2011, Liwowsky, Kramer, Mergl et al., 2009) and anxiety (Comino, Harris, Silove, Manicavasagar, Harris, 2000).

Moreover in order to evaluate the influence of perceived job satisfaction/stress as independent variables it was added these appraisals in the computing of the negative occupational-cultural factor to test whether the influence of job characteristics on psychophysical health conditions would be greatest including perceived job satisfaction/stress in combination with individual characteristics and ethnicity dimensions. It was followed the same criteria reported above for the computing of total score and the new variable designed "Negative Occupational-Cultural-Appraisal Factors Score" (NOCAF) was calculated.

Table 6.8 below shows the effects associated with exposure to NOCAF on Anxious-Depressive disorders, General health and Relational disorders.

Table 6.8: Multi-variable associations of NOCAF with Anxious-Depressive disorders, General health and Relational disorders

Outcomes		OR	CI
Anxious-Depressive Disorders	1st tertile	1.00	
	2nd tertile	1.677	1.007-2.006
	3rd tertile	5.437	2.641-10.839
General Health	1st tertile	1.00	
	2nd tertile	1.251	.802-1.835
	3rd tertile	1.986	1.003-3.651
Relational Disorders	1st tertile	1.00	
	2nd tertile	1.041	. .594-2.080
	3rd tertile	2.462	1.231-5.831

The likelihood of reporting Anxious-Depressive disorders, Relational disorders and poor general health increases where exposure to NOCAF is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. Comparing with the previous table the odds ratios (at the 3rd tertile) for relational disorders decrease and the odds ratios (at the 3rd tertile) for anxious-depressive disorders increase (differences in the size of the odds ratios at the 2nd and 3rd tertiles were significant for anxious-depressive disorders). Very similar odds ratios

were found for general health. Data suggest the influence of the perceived job satisfaction/stress but the associations of each factor with health outcomes in the following sections will clarify the potential impact of job satisfaction/stress.

6.6.3 Logistic regression analyses: independent variables on job satisfaction/stress and health outcomes

In accordance with hypotheses two and three, logistic regression analyses were carried out to explore the main effects of individual differences, psychosocial job characteristics and cultural dimensions on perceived job satisfaction/stress (see tables 6.9, 6.10 below) and the main and the interaction effects of individual differences, work characteristics, ethnicity dimensions and appraisals on psychophysical outcomes in the whole sample of workers (see tables 6.11, 6.12, 6.13 below). ANOVAs to test the main effects are reported in appendix 6.4.

Table 6.9: Multi-variable associations of significant main effects with perceived job satisfaction

Variables	OR	CI
Work Demands		
Low	1.00	
High	.584	.419-.815
Emotional Coping		
Low	1.00	
High	.673	.476-.951
Objective Coping		
Low	1.00	
High	2.662	1.876-3.777
Type A behaviour		
Low	1.00	
High	.696	.499-.971
Search Identity/Adoption of the host culture		
Low	1.00	
High	1.834	1.373-2.476
Perceived discrimination		
Low	1.00	
High	.546	.401-.796

Table 6.9 above showed the significant multivariable associations of individual differences, work characteristics, ethnicity dimensions on perceived job satisfaction. The group of workers who perceived high levels of work demands and who had experienced racial discrimination were less likely to perceive job satisfaction, as well as the workers with high recourse to emotional coping and Type A behaviours. Moreover those who favoured objective coping and a search identity/adoption of the host culture were more likely to perceive job satisfaction.

Table 6.10: Multi-variable associations of significant main effects with perceived job stress

Variables	OR	CI
Work Demands		
Low	1.00	
High	1.842	1.119-2.532
Objective Coping		
Low	1.00	
High	.603	.379-.815
Type A behaviour		
Low	1.00	
High	1.956	1.235-2.761
Affirmation/Maintenance culture		
Low	1.00	
High	2.546	1.276-4.862

Table 6.10 above showed the significant multivariable associations of individual differences, work characteristics, ethnicity dimensions on perceived job stress. The group of workers with high perception of work demands, with high recourse to Type A behaviours and who favoured an affirmation/maintenance culture were more likely to perceive job stress, Moreover those who favoured objective coping were less likely to perceive job stress.

Table 6.11: Multi-variable associations of significant main and interaction effects with anxious-depressive disorders

Variables	OR	CI
Nationality/Jobs		
Italian masons	1.00	
Eastern European care workers	2.955	1.573-5.552
Moroccan factory workers	.460	.285-.918
Ghanaian masons	.314	.155-.698
Italian factory workers	5.735	2.520-13.051
Work Demands		
Low	1.00	
High	3.275	2.107-6.456
Objective Coping		
Low	1.00	
High	.371	.189-.775
Type A behaviour		
Low	1.00	
High	3.516	2.223-7.466
Social Inhibition		
Low	1.00	
High	3.383	2.158-6.808
Work Stress		
Low	1.00	
High	1.919	1.361-3.971
Affirmation/Maintenance Culture		
Low	1.00	
High	.404	.213-.852
Perceived discrimination		
Low	1.00	
High	2.422	1.344-4.856

Table 6.11 above showed the significant multivariable associations of individual differences, work characteristics, ethnicity dimensions and appraisals on Anxious-Depressive disorders. Considering the nationality, the Italian factory workers and Eastern European care workers may be more likely to suffer Anxious-Depressive disorders. The workers with perceptions of high work demands and work stress, with high recourse to social inhibition and Type A behaviours and who had experienced racial discrimination were more likely to suffer Anxious-Depressive disorders. Moreover those who used high levels of objective coping and an affirmation/maintenance culture were less likely to suffer these psychological disorders.

Moreover associations of nationality/job and work demands with psychophysical outcomes are shown in each ethnic group (see chapter 7). Non-significant interactions were found for anxious-depressive disorders.

In the prediction of relational disorders, the significant interaction variables reported in the table 6.12 below are work demands*work resources ("covariates" are work demands, work resources and work demands* work resources and 'first indicator' contrast was used in order that the tabulated odds ratios were compared to low work demands*low work resources, as the reference category), work demands*discrimination ("covariates" are work demands, discrimination and work demands*discrimination and 'first indicator' contrast was used in order that the tabulated odds ratios were compared to low work demands*low discrimination, as the reference category).

Table 6.12: Multi-variable associations of significant main and interaction effects with relational disorders

Variables	OR	CI
Nationality/Jobs		
Italian masons	1.00	
Eastern European care workers	.362	.155-.732
Moroccan factory workers	3.230	1.589-6.565
Ghanaian masons	3.134	1.507-6.518
Italian factory workers	2.814	1.375-5.774
Work Demands		
Low	1.00	
High	1.939	1.121-3.834
Rewards		
Low	1.00	
High	.497	.301-.919
Objective Coping		
Low	1.00	
High	.475	.286-.892
Total Job Satisfaction		
Low	1.00	
High	.276	.142-.569
Search identity/Adoption of the host culture		
Low	1.00	
High	.505	.319-.935
Perceived discrimination		
Low	1.00	
High	2.525	1.994-4.879
Low work demands x Low work resources	1.00	
High work demands x High work resources	.543	.472-.622
Low work demands x Low discrimination	1.00	
High work demands x High discrimination	2.875	1.437-5.436

Table 6.12 shows that the Moroccan and Ghanaian workers may be more likely to suffer relational disorders and the group of workers who perceived high levels of work demands and who had experienced racial discrimination were more likely to suffer relational disorders. Moreover the workers who perceived high levels of rewards and job satisfaction and who used objective coping and a search identity/adoption of the host culture were less likely to suffer this psychological disorder.

In terms of interaction effects, the group of workers with high perception of work demands associated with high perception of work resources were less likely to report relational

disorders while the workers with high perception of work demands associated with perceived racial discrimination were more likely to report this psychological health outcome (in accordance with ANCOVA in chapter 4). In particular 63.1% (*N*=154) of workers with high perception of work demands associated with high perception of work resources reported lower levels of relational disorders and 61.4% (*N*=105) of workers with high perception of work demands associated with high perception of racial discrimination reported higher levels of relational disorders.

Table 6.13: Multi-variable associations of significant main and interaction effects with general health

Variables	OR	CI
Nationality/Jobs		
Italian masons	1.00	
Eastern European care workers	.462	.232-.919
Moroccan factory workers	.137	.065-.289
Ghanaian masons	.095	.046-.197
Italian factory workers	2.497	1.008-6.188
Work Demands		
Low	1.00	
High	2.956	1.924-5.966
Rewards		
Low	1.00	
High	.403	.201-.804
Objective Coping		
Low	1.00	
High	.477	.311-.907
Type A behavior		
Low	1.00	
High	3.235	2.127-6.317
Affirmation/Maintenance culture		
Low	1.00	
High	.351	.162-.721
Low work demands x Low work resources	1.00	
High work demands x High work resources	.531	.426-.598

Finally data reported in table 6.13 shows that only the Italian factory workers may be more likely to suffer poor general health. Moreover the group of workers with high perception of work demands and with high recourse to Type A behaviours were more likely to report

poorer general health, while those who perceived high levels of rewards and who favoured objective coping and an affirmation/maintenance culture were less likely to suffer poor health.

In terms of interactions work demands had a substantial association with work resources in the prediction of general health ("covariates" are work demands, work resources and work demands* work resources and 'first indicator' contrast was used in order that the tabulated odds ratios were compared to low work demands*low work resources, as the reference category). Then the group of workers with high perception of work demands associated with high perception of work resources were less likely to report poor general health. In particular 65.6% (*N*=143) of workers with high perception of work demands associated with high perception of work resources reported lower levels of physical problems.

6.7 Summary and discussion

Findings give an indication of the risk of reporting occupational stress, psychological disorders and physical problems for the whole sample of workers before analysing in more detail the different profiles of associations in each ethnic group and integrating with more results the proposed model.

The data support much past research and the simultaneous use of multiple theoretical constructs from popular stress models and the results confirmed the experimental hypotheses based on the proposed model, the importance of investigating the effects of the dimensions related to the occupational stress on health outcomes and of considering each aspect of ethnicity and its potential relationships with these variables.

The results relevant to the three hypotheses can be summarized as follows:

Hypothesis one:

Among the whole sample of workers the likelihood of reporting Anxious-Depressive disorders, Relational disorders, poor general health, job work stress and job dissatisfaction increased significantly as a function of level of exposure to negative occupational-cultural factor. These findings showed that for these workers the likelihood of suffering Anxious-Depressive disorders was higher than the other two health conditions in accordance with most studies on depression (Madianos, Economou, Alexiou, Stefanis, 2011, Liwowsky, Kramer, Mergl, et al., 2009) and anxiety (Comino, Harris, Silove, Manicavasagar, Harris, 2000) among migrant workers.

Moreover the negative influence of job characteristics on psychophysical health conditions would be greatest including perceived job satisfaction/stress in combination with individual characteristics and ethnicity dimensions. In particular comparing with the results excluding perceived job satisfaction/stress, the odds ratios (at the 3rd tertile) for relational disorders decreased and the odds ratios (at the 3rd tertile) for anxious-depressive disorders increased (differences in the size of the odds ratios at the 2nd and 3rd tertiles were significant for anxious-depressive disorders). It seems that the presence of perceived job satisfaction/stress has a potential impact especially in the prediction of relational disorders and anxious-depressive disorders. This result on Anxious-Depressive disorders was in accordance with a study conducted by Smith, McNamara, Wellens, 2004 on two large-scale (i.e. N > 4000) community samples. Very similar odds ratios were found for general health.

Hypothesis two:

Findings confirmed the main effects of the dimensions related to the associations of occupational stress with the health outcomes and the importance of considering each aspect of ethnicity and its potential relationships with these variables.

Considering the influence of the individual differences, job characteristics and cultural dimensions on perceived job satisfaction/stress; work demands, perceived racial discrimination, emotional coping and Type A behaviours were associated with lower perception of job satisfaction while the objective coping strategy and a search identity/adoption of the host culture increases the likelihood to perceive job satisfaction.

Moreover work demands, Type A behaviours and an affirmation/maintenance culture were associated with higher risk of perceived job stress while the objective coping strategy reduces the likelihood of perceiving job stress.

In the prediction of Anxious-Depressive disorders, work demands and work stress, the personality behavioural patterns of social inhibition and Type A and racial discrimination were associated with higher risk of anxiety and depression, while objective coping and an affirmation/maintenance culture seem to reduce this risk. Considering nationality, the Italian factory workers and Eastern European care workers may be more likely to suffer Anxious-Depressive disorders.

Moreover high levels of work demands and racial discrimination were associated with higher risk of reporting relational disorders, while rewards, the objective coping strategy, the cultural dimensions of search identity/adoption of the host culture and perceived job satisfaction appear to be associated with a lower risk of this psychological outcome. All the migrant groups except the Eastern European may be likely to suffer relational disorders.

Finally with respect to general health, high recourse to Type A behaviours and high perception of work demands were associated with poorer general health, while rewards, objective coping and affirmation/maintenance culture seems to reduce the risk of reporting physical problems. It is very interesting that only the Italian factory workers may be likely to suffer poor general health while for the migrant groups nationality/jobs seems to reduce the risk of reporting general health problems and it is probably due to the fact that Italians were older than their migrant counterparts (as reported in chapter 3).

These results confirmed the main effects suggested by the proposed model, the associations of coping strategies and work characteristics with anxiety and depression in accordance with some studies on the application of DRIVE model (Mark & Smith, 2012a, b) and the associations reported in literature between Type A personality and physical diseases (Gallo et al., 2001; Ganster, Schaubroeck, Sime and Mayes, 1991, Spence et al., 1987).

With respect to the Ethnicity dimensions it is interesting that the adoption of the host culture strategy could be considered a behavioural pattern that reduces the risk of marginalization and of suffering relational disorders, while an affirmation/maintenance culture seems to reduce the risk of suffering physical problems and anxious-depressive symptoms. These data on ethnicity will be looked at in more detail in each ethnic group where each minority favoured different types of behaviours depending on their origin and traditions. Results on perceived discrimination were in accordance with the literature on this subject (Klonoff et al., 1999; Troxel et al., 2003; Roberts et al., 2004; Smith et al., 2005).

Hypothesis three:

Furthermore in terms of interaction effects, there were significant interaction effects between job demands and work resources in the prediction of relational disorders and general health

and job demands significantly interacted with perceived discrimination in the prediction of relational disorders.

In summary findings from these analyses confirmed the main and few interaction effects on health outcomes and the hypotheses of the proposed model were basically supported.

The data from this sample support previous findings reported by JDC, ERI and DRIVE models. These tested hypotheses could be added to the previous findings (chapters 3 and 4) before introducing the next chapters where the associations between the dimensions involved in this stress model will be described in more detail for each ethnic group and some aspects of the proposed model will be clarified.

Therefore, including only those predictions for which there was strong support, the final empirically supported version of the enhanced Ethnicity and work-related stress model is shown below (figure 6.5).
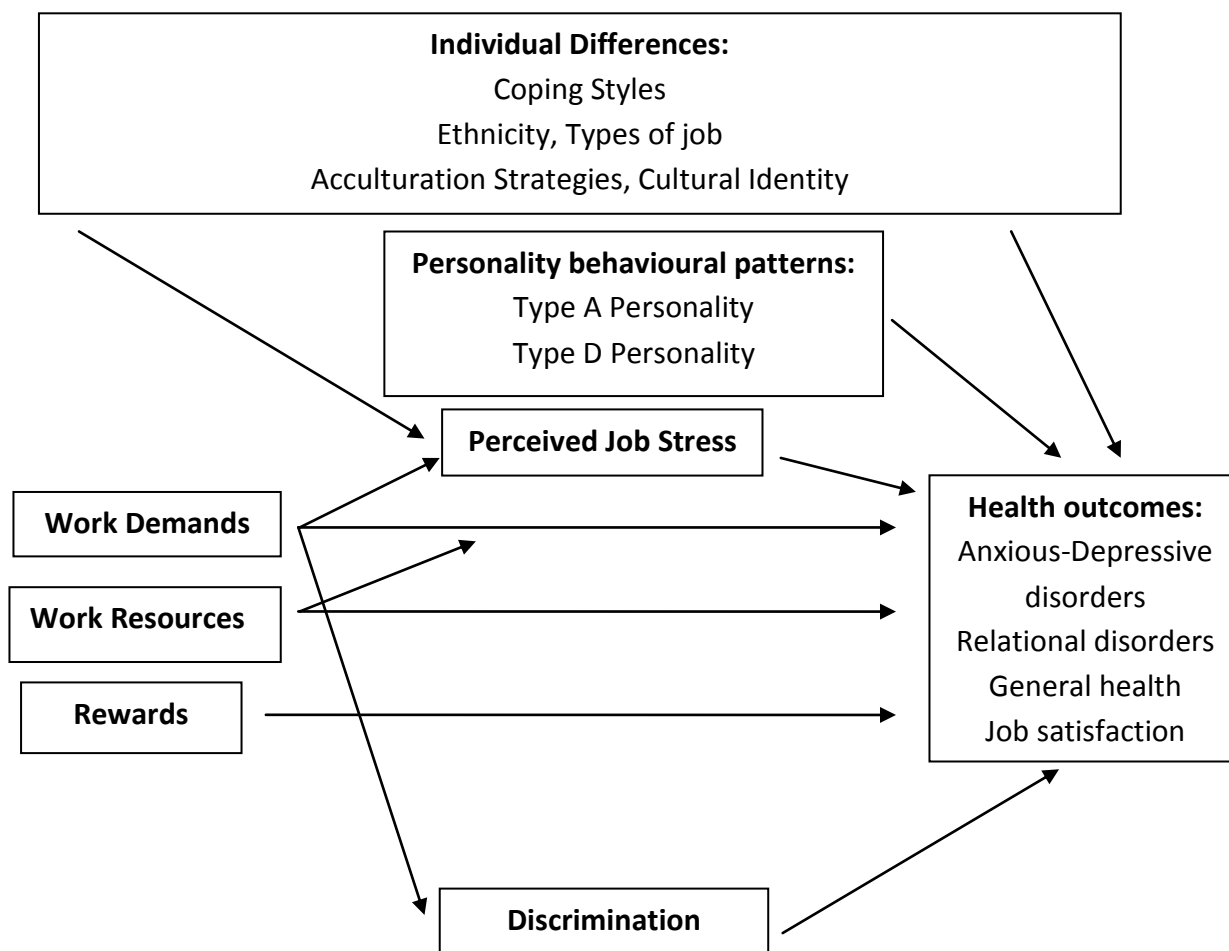
Figure 6.5: An ethnicity and work-related stress model

The above figure showed that work demands, individual differences and personality behavioural patterns, work resources/rewards, appraisals (perceived job satisfaction/stress) and ethnicity dimensions (acculturation/cultural identity behaviours and racial discrimination) are all proposed to have main effects on anxious-depressive symptoms, relational disorders and physical problems.

The role of job satisfaction in the general model is particularly interesting because this factor influences the psychophysical health conditions (as independent variables) and at the same time is a relevant outcome in the associations with the individual differences and psychosocial job characteristics (in accordance with DRIVE model).

As regards the perceived job stress factor, in accordance with DRIVE model our data confirm the key relationships proposed by the Mark and Smith (2008) related to the significant associations of work demands and some specific individual differences with perceived job stress and the significant association of perceived job stress (as independent variable) with health outcomes. Perceived job stress is hypothesised to be the mechanism by which levels of workplace psychosocial factors can affect health outcomes.

Moreover in accordance with Karasek and Siegrist models, Mark and Smith (2008), Crede et al. (2007), Klonoff et al. (1999), Troxel et al. (2003), Roberts et al. (2004), Smith et al. (2005) perceived work resources as well as perceived discrimination had interaction effects with job demands in the prediction of specific health outcomes. Therefore there was not deemed enough evidence to consider these interactions in terms of mediating and moderating effects because they were not statistically demonstrable by logistic regression analyses. However the total contribution of the interaction effects to the model was marginal and we do not expect evidence of these in the application of the model in each ethnic group.

Finally it is possible that future research and applications of the model in each different ethnic group may give more attention to these indirect effects in workplace.

6.8 Summary

On the basis of the literature on stress models, the specific research on migrant workers and the results reported in the previous chapters a transactional model of ethnicity and stress has been formulated which simultaneously compared a number of job characteristics, individual differences, ethnicity dimensions and appraisals in the prediction of psychophysical health conditions in migrant and Italian workers. The results from this part of the study have confirmed the main effects predicted by the model and few interaction effects in the

prediction of psychophysical disorders. The next chapter will apply the proposed model in each ethnic group separately in order to reduce the confounding factors and to establish a profile of associations for each ethnic group and each job.

Chapter 7: Ethnicity and Work related stress in Eastern European, Moroccan and Ghanaian workers

7.1 Introduction

This chapter will report the application of the proposed model in each ethnic group to show different profiles of associations for each ethnic minority. The groups were: Eastern European care workers for elderly people (N=250), Moroccan factory workers (N=250), Ghanaian masons (N=200), Italian factory workers (N=100) and masons (N=100). For each ethnic group we have selected control groups of Italians that worked in the same sectors, except for the Eastern Europeans because these jobs are almost exclusively filled by these women and it was difficult to find Italians that did this job.

Before analysing each ethnic group, some relevant differences on work characteristics and work conditions, cultural dimensions, individual differences, appraisals, health outcomes in migrant and Italian workers (two groups) are reported.

Then the specific literature on stress in the occupational sectors represented by the three individual groups introduces each study.

The methodology involved different types of statistical analyses including crosstabulations, chi square and logistic regression analyses. The results have partially confirmed the hypotheses predicted by the model, the presence of different profiles of associations in each ethnic group compared to the respective control groups.

7.2.1 Differences between migrant and Italian groups. Some studies

Before analysing the differences between the migrant and Italian groups, many studies that divide ethnicity into two groups (the majority and minority) and in particular the specific

literature on work characteristics and work conditions, cultural dimensions, appraisals, health outcomes in migrant and native workers were reviewed.

It is clear that the life and work situation of people recently arrived in a country is quite different from those who have been born or lived there for a long time.

Migrants are clearly more occupied in the "three D-jobs": dirty, dangerous and demanding (International Labour Organization, 2004). The European Foundation for the Improvement of Living and Working Conditions (2007) points out that, in addition to labour shortages other factors help to explain the segregation of migrants in less rewarding jobs and sectors, including language and legal barriers to skilled occupations along with more or less subtle forms of discrimination.

The studies reported above focus on the different work characteristics in ethnic minorities and natives.

Migrants are more occupied in the sectors of agriculture and horticulture, construction, health care, households, transport and food. Studies of the ILO (International Labour Organization, 2004), showed that more than one third of the vacancies for semi-skilled jobs were closed to young, male applicants of migrant or ethnic minority origin.

One general remark to be made when analysing the working conditions of migrant workers is the influence of the sector and occupation. This means that, to a certain extent, some of the disadvantageous conditions that migrant workers face may be explained by the sectors and occupations where they are employed and not only for the fact of being migrants.

Starting with salaries, many studies (ILO report, 2004) show that wages are significantly lower for migrants than natives even when taking into account factors such as occupation, education, industry and experience.

Several studies show that working arrangements differ between migrants and native workers.

In a German study it was noticed that Turks accepted shift work, weekend work, piecework, work at the assembly line and overtime work more often than Germans. This finding is supported by McKay (2007), pointing out that migrant workers often work long hours, unsocial shifts and are less likely to have paid holidays or sick leave.

A French study (Gliber, 2004) shows that immigrant workers have more frequent and prolonged exposed to serious occupational risks due to the nature of their work and employment status (interim, part-time). Their insufficient knowledge of the language, fear of losing their job, lack of training, inexperience and lack of knowledge about their legal rights are factors that contribute to this situation.

In a Dutch study (Allochtonen, 2002) migrant workers reported following negative aspects in their working conditions: radioactive and dangerous substances, noise, temperature, no security measures and isolated work. Working conditions were described as dirty, demanding and monotonous, with high work pressure and working below their qualifications.

In the Spanish working conditions survey of 2005 which classified workers into five groups in terms of their perception of their working conditions according to 14 factors (such as work pace, control, lack or difficulties of communication, physical load, noise, exposure to chemical products, precarious employment), the group that had the worst perception of their working conditions was the one with the highest proportion of immigrant workers (Spanish Working Conditions Survey, 2005).

In Sweden, migrant workers experienced physical load in their work more often than native workers. Migrants also perceived their work as monotonous more often than natives and had less frequent opportunities to learn new things than their native counterparts (Rosmond et al., 1998).

Other studies suggest that the social climate and relations at the workplace, the experience of workplace racial discrimination and the limitations in private life or social isolation could

give rise to special difficulties for migrant workers. However, as stressed by the European Foundation for the Improvement of Living and Working Conditions (2007), there are also remarkable differences among immigrants according to sex, country of origin and duration in the host country.

In this sense, there are two groups who suffer a particularly negative situation: young people and women. The International Labor organization (ILO) has collected figures on the number of migrants and unemployment that show that in all countries foreign workers have higher unemployment rates than the total workforce and that non-EU migrants have a lower labour market participation rate than EU nationals (European Commission, Employment in Europe, 2002).

Roberts et al (2004) interviewed 1,728 American workers about aspects of their jobs, their exposure to racial discrimination at work, and dimensions of mental health. American minorities reported more discrimination at work than White Americans and there was evidence of institutional discrimination against minorities.

Regarding gender differences, women are more likely to believe that their health, both physical and mental, is being compromised by the work they do and they are more likely to say that they have experienced discrimination at work. A Belgian study (Lehman et al., 2004) reported that the interaction between migrants and locals at the workplace depends on the kind of professional relationships among workers. Inclusion and integration occur when workers are very dependent on each other to do their job, when they work under the direct control of their nearest superior and when cultural differences are not linked with relevant professional competence and specialisation. As opposed to this, when certain migrant groups are engaged for specific jobs, separation will show up among the groups.

In temporary work relationships, where a high degree of autonomy and cultural differences are not linked to the job, there will be marginalisation and less effort will be undertaken to get into contact with each other.

A specific relationship exists when workers have to work in a team, are dependent on each other for their safety at work and perform their work with a customer and not in the organization. Newcomers will not easily be accepted and they will find it difficult to wholly adapt to the local culture. They will only be accepted in the extent to which they share this local culture.

A study of the Dutch National Office for the Fight Against Discrimination showed that the victims being bullied and not the offenders suffer the negative consequences of filing a complaint (Bochhah, 2006). Most respondents in the study lost their job and went through psychological and financial problems. Some other studies from the Netherlands also deal with discrimination. Migrant workers characterized their professional relationships in terms of discrimination, bullying and not accepting the differences in norms and values (Allochtonen, 2002; Kerkhoven, 2000). In the health care sector, migrant workers felt themselves significantly more often discriminated by managers and colleagues than their Dutch colleagues. According to occupational physicians working with migrant workers, they report communication problems, discrimination and bullying against them (migrant workers) (Kerkhoven, 2000).

In Ireland, McGinnity, O'Connell, Quinn and Williams (2006) analysed discrimination of non-EU immigrants in a variety of fields, including the workplace, and reported that almost one third (32%) of surveyed people holding work permits had suffered from insults or other forms of harassment at work, while 21% of those entitled to work reported discrimination in access to employment.

In the UK, studies have raised the question about racial bullying; that is, bullying because of ethnicity. In one of these studies, employees from ethnic minority groups, the biggest of whom were African, Caribbean, Asian (not including Chinese) and Indian, perceived themselves being bullied more often than native employees. In all, 25% of ethnic minority workers, compared with 12% of natives, perceived themselves bullied. Most of the ethnic minority employees (83%) thought that people in their organisation were treated unfairly because of their race (Giga S & Hoel, 2006). In another study, those of Asian descent were more likely to be bullied than those considering themselves to be white (Hoel & Cooper, 2000).

The risk of bullying and harassment seems to be high particularly in the health care sector. Approximately 40% of the ethnic minority nurses in the UK had been subject to racial harassment by work colleagues, compared to the overall rate of 10% for all nurses. Over 60% of ethnic minority nurses had been subject to racial abuse by patients compared to 20% of nurses generally (Likupe, 2006; Shields, Price, 2002; Batnitzky, McDowell, 2011). In the Bristol and Cardiff studies conducted by Smith et al. 2005 data showed that in ethnic minorities' gender and racial discrimination have a powerful influence on health outcomes.

Finally we will mention only some studies on job satisfaction. Studies on Ethnicity and occupational health and work stress are reported in more detail in chapter 3.

Job satisfaction and feelings of work-related stress among migrants have been studied in some countries.

A Finnish study (Juuti, 2005) showed that there was no difference in job satisfaction between migrant and Finnish workers. Of the stress reactions, irritability and restlessness were more common among Finns than migrants, while feelings of loneliness were more common among migrants.

In a Spanish study (Zabaleta, 2004) the level of job satisfaction of immigrants working in the construction sector was 6.6 (Maximum value: 10), while in the hotels and restaurants sector it reached 6.7. Immigrants were more satisfied with their bosses than native workers. In both sectors a majority of immigrant workers considered that their working conditions were similar to those of their Spanish colleagues in all aspects. Working hours, dangerous tasks and the use of dangerous products were issues on which greater equality was perceived. On the other hand, social benefits and opportunities for promotion were aspects that were perceived with less equality. Satisfaction regarding the salary was lower for migrant workers. Moreover, in a study carried out in Canada on Filipino workers (Wang, 2005), job satisfaction is considered an interesting work outcome among immigrant employees that correlates with support from Canadian-born co-workers and management only, and not with perceived support from peer immigrants and self-efficacy and is an important factor in predicting employees' productivity and absenteeism.

All the studies described above give insufficient attention to the complex nature of ethnicity and all its related aspects (Acculturation, Perceived discrimination and Ethnic Identity) and select some aspects of these dimensions or consider ethnicity only as a descriptor of the population studied (ethnic majority or minority) and not as an individual difference (moderator or mediator) or as a potential source of stress. Moreover these studies associated ethnicity with health conditions, work characteristics or appraisals as single associations not in a general model that integrates Ethnicity and work related aspects in a transactional perspective and evaluates the significant associations between Individual differences, Work characteristics, Cultural dimensions, Appraisals and Health outcomes. For this reason after testing above our experimental model in the overall sample, the application of the model in migrant and Italian groups is reported below.

7.2.2 Differences between migrant and Italian groups. A brief summary of data

In accordance with the proposed model some aspects considered for the whole sample are evaluated for the migrant and Italian groups (tables on descriptives, crosstabulation and logistic regression analyses are all reported in appendix 7.1).

Therefore the relationships described for the whole sample and that we proposed to test in the two groups are the followings:

1) Negative coping and personality behaviours, work demands, racial discrimination and perceived work stress would be significantly associated with high levels of Anxious-depressive disorders, Relational disorders and Physical problems.

2) Work resources and rewards, positive coping, some acculturation strategies and perceived job satisfaction would be significantly associated with low levels of psychophysical disorders.

Data on perceived job satisfaction/stress were excluded in this comparison because for the Italian group there were very few significant associations of all the factors with these appraisals probably due to the small and then unrepresentative sample with respect to the large migrant sample size (it will be described in the followings studies on each group).

Looking in more detail at some differences with respect to descriptive statistics; among migrant workers, 59% were men, 35.7% worked as care workers for the elderly (from East Europe), 35.7% as factory workers (from Morocco) and 28.6% as masons (from Ghana). Most of them were married (95.4%) and 50.6% had a high school education. Finally, 66.3% worked part-time and 52.1% with temporary/casual contract.

Among Italian workers, all of them were men; half of them worked as factory workers and the other half as masons. Most of them were married (96.0%) and 49.0% had a high school education. 50.5% worked full-time and 51.0% with fixed term contract.

Between the two groups we found some differences in particular with respect to work status and contract type. In fact only one third of migrant worked full-time compared to half part of the Italian sample and none of migrant workers had permanent contracts (only fixed term or temporary) compared to more than one third of natives. These data confirm the studies reported in the literature (section 7.2.1).

Therefore different profiles of associations between ethnicity dimensions and individual differences, work characteristics, perceived job satisfaction/stress and health outcomes in migrant and Italian workers were reported in table 7.1 below.

Table 7.1: Summary of the significant factors in migrant and Italian workers with respect to health outcomes

Migrant workers (OR)	Italian workers (OR)
Anxious-depressive disorders	
-Work demands (2.446) -Emotional coping (.666) -Objective coping (.690) -Social inhibition (.701) -Search Identity/Adoption of the host culture (1.605) -Perceived discrimination (2.440)	-Work demands (1.817)
Relational disorders	
-Work demands (1.835) -Work resources (.615) -Negative affectivity (1.801) -Affirmation/Maintenance culture (1.766) -Perceived discrimination (2.015)	-Work demands (1.998) -Work resources (.236) -Negative affectivity (2.827)
General health	
-Rewards (.586) -Emotional coping (.643) -Objective coping (.740) -Perceived job satisfaction (.725) -Affirmation/Maintenance culture (.457) -Search Identity/Adoption of the host culture (.415) -Perceived discrimination (1.763)	-Type A behavior (2.488) -Perceived work stress (4.725)

The significant factors from the logistic regression analyses reported in the table above can be summarized as follows.

Migrant workers with perceptions of high work demands and with high recourse to a search identity/adoption of the host culture were more likely to report Anxious-Depressive disorders

and those who favoured emotional/relational coping, objective coping and social inhibition behaviours were less likely to suffer Anxious-Depressive disorders. It is in accordance with the literature (Erdogan, 2002; McKay,2007; Gliber, 2004; Allochtonen, 2002) that migrant workers have experienced working conditions as dirty, demanding and monotonous, with high work pressure and working below their qualifications (work demands) more often than native workers and that these conditions lead to psychological problems.

Moreover the protective role of the social inhibition behavioural pattern as a personality characteristic that contributes to coping with Anxious-depressive disorders was interesting and unexpected, and these data suggested that more attention should be given to possible associations with acculturation strategy centred on an affirmation/maintenance culture (i.e. interest in engaging with their ethnic culture) in one of our ethnic groups.

Considering the risk of suffering Relational disorders, similar odds ratios were found for migrant and Italian workers who perceived high levels of work demands and for both groups negative affectivity behaviours were associated with higher likelihood of reporting this disorder but for Italian workers the risk was higher. Moreover Migrant workers with high recourse to an affirmation/maintenance culture were more likely to report Relational disorders. Among migrant workers there was a significant association of high perception of work resources with low likelihood of suffering Relational disorders; and a similar association was found for the group of Italian workers (only a smaller difference in terms of odds ratio). Data confirmed the findings reported in literature on the mediating effects of negative affectivity on somatic and psychological symptoms (Watson and Clark, 1984, Brief et al., 1988, Parkes, 1990, Specter, 1994; Terry et al., 1993).

Finally with respect to General health, the group of migrant workers with perceptions of high rewards and job satisfaction and who favoured emotional coping, objective coping, an affirmation/maintenance culture and a search Identity/adoption of the host culture were less

likely to suffer Physical problems, while the Italian workers who favoured Type A behaviours and who perceived work stress were more likely to report poor health. These data confirmed the associations reported in literature between Type A personality and Physical diseases and mediating role of this behavioral pattern (Ganster, Schaubroeck, Sime and Mayes, 1991; Spence et al., 1987).

As stated in the chapter 3 the group of migrant workers (Ethnicity not Italian) may be more likely to suffer Anxious- depressive, Relational disorders and less likely to suffer Physical problems than Italian workers. For this reason the data on migrant workers reported above show significant associations with low risk of suffering physical problems. Moreover racial discrimination may be associated with psychophysical problems and many difficulties in terms of integration.

According to the literature on the stress in workplace our findings confirmed the presence of different profiles of associations between the two groups.

Finally the acculturation/ethnic identity variables and their potential relationships are shown in more detail in the next sections where the different profiles of each ethnic group are described and integrated with these findings and the significant differences between the groups are reported.

7.3 Study one: Psychosocial aspects in Eastern European care workers for elderly

7.3.1 Stress in care workers: a literature review and the Italian background

Before analyzing the application of the model in the Eastern European care workers, the literature on stress in care is reviewed in order to underline the potential risk factors related to this type of job.

Health care workers can experience anxiety and depression or psychosomatic diseases and a resultant deterioration in quality of life and service provision (Weinberg and Creed, 2000; Michie and Williams, 2003; Leiter et al., 1998; Firth-Cozens and Greenhalgh, 1997).

There are many stress factors in the workplace of care workers that have been shown to increase the risk of distress, for example, an increasing workload, contact with suffering and dying patients, verbal and physical abuse by patients, the need to hide negative emotional responses, risk of litigation, role conflicts between professions, and organizational changes (McNeely, 2005; French et. al, 2000).

The burden and depressive symptoms sustained by carers have been the two most widely studied outcomes. Several studies suggest that many care workers are at risk of experiencing clinical depression (Gallant et al., 1997). Dura et al (1991) found that nearly one quarter of care workers met the criteria for depression whilst in the care-giving role, although they had never been diagnosed with depression prior to their assumption of this role. It has been proven that if the problem behaviours and the functional impairment in the care recipients is worse, the strain score is higher and the carer is more likely to be depressed (Molyneux et al., 2008). Risks for carer psychological distress or depression are related to gender, age, health status, ethnic and cultural affiliation, and lack of social support (Gruetzener, 2001).

Carers face unfamiliar and unpredictable situations which increase stress and anxiety. Anxiety may be increased by behavioural problems among patients who cannot be successfully managed on a consistent basis and is associated with depression, stress, and physical ill health (Williamson and Schulz, 1993). Carers of people with both physical and cognitive impairments have higher scores for objective burden of caring than those caring for people with either type of impairment alone (McDonell et al., 2003). There is increasing interest in examining the factors that help care workers successfully manage their role, while minimizing the effect on their mood and general well-being (Quayhagen, 1998).

Ballard et al. (1995) demonstrate that a higher level of carer education increases carers' feelings of competency. This is more likely to reduce their expectations of their dependents' abilities. Previous studies which have looked at these coping strategies and feelings of competence have shown that unrealistic expectations of a dependant increases carers' risk of depression, and conversely a reduction of carers' expectations is associated with lower rates of depression. Furthermore, carers who experience feelings of powerlessness, lack of control, and unpreparedness have higher levels of depression (Coppel et al., 1985).

Other studies suggest that care workers who use more active coping strategies, such as problem solving, experience fewer symptoms of depression than do those who rely on more passive methods. Significant associations have been reported between positive strategies for managing disturbed behaviour, active strategies for managing the meaning of the illness, and reduced levels of caregiver depression (Coon et al., 2004).

Moreover healthcare work is particularly physically demanding (Skotte el al., 2002) and in a survey involving more than 8000 healthcare workers in eldercare 23%, 28%, and 12% reported chronic pain in the low back, neck/shoulders, and knees, respectively. Thus, healthcare work in eldercare may be particularly physically demanding. A Scandinavian

study has also considered the relevant presence of chronic musculoskeletal pain in care workers (Holtermann et al., 2010).

In addition, many studies have shown that levels of dissatisfaction and distress are high among care workers (Karasek, 1992) and may even be higher than among workers in other occupations. Job satisfaction, fostered by the intrinsic rewards of helping others, predicts retention among direct care workers (Denton et al. 2007). Intrinsic rewards, however, are often accompanied by the physical and emotional demands of providing care and by inadequate extrinsic rewards (Benjamin and Matthias, 2004; Stacey, 2005; Geiger-Brown et al., 2007).

Furthermore Ethnicity has a substantial impact on the care-workers' experience. Comprehensive reviews of the literature have identified differences in the stress process, psychological outcomes, and service utilization among care workers of different racial and ethnic backgrounds (Connel et al., 1997). Studies consistently show important differences in perceived burden and depression among African-American, White, and Hispanic care-workers (Calderon and Tennstedt, 1998). Caucasian care workers tend to report greater depression and appraise care-giving as more stressful than African-Americans (Farran et al., 1997). Hispanics report greater depression and behavioural burden than Caucasians and African-Americans (Harrwood et al., 1998). High quality of informal relationships, and the presence of informal support, is related to lower depression (Cox, 1995) and less deterioration in emotional health for African-American care workers, but not for Whites (Alten, 1993).

The conditions in Italy, with its longstanding negative growth rate and inadequate state policies in response to a progressively older population, provide an important case study for understanding the complexities of eldercare. As of today approximately 25 percent of the population of Italy is over 60 years old. This means that 14.7 million people, of whom an

estimated 8.4 million are female and 6.3 million are male, are likely to require care at some stage of their lives because of chronic illness or the effects of aging (ISTAT, 2007).

In addition, the availability of careers is decreasing. Several dynamics contribute to this development, among them: a reduction in family size and thus of the number of daughters available to provide care for elderly relatives; changing family structures and the progressive reduction of kin networks of support (Zanatta, 2005; Glucksmann and Lyon, 2006). Responsibility for their care, therefore, falls almost exclusively upon their families and, more specifically, on the women of the family. Regardless of women's increased participation in the labor market, in Italy the domestic world still remains 'a woman's domain' (Alemani, 2004; Polverini et al., 2004). At the same time, the increase in women's paid employment has been very significant. In 2006, 46.7 percent of Italian women were participating in the labor market comparing to the current 49.7% but is still low relative to the average of EU countries around the 58.5% (ISTAT, 2014).

Furthermore, changes in the Italian national health services have led to shorter hospital stays and early discharge, so that elderly people may be sent home from the hospital before they are completely healed (Palese et al., 2004). Increasingly, Italian women are no longer capable of or willing to offer assistance to the elderly, yet they are reluctant or unable, due to limited space in public institutions and the high costs of the private ones, to institutionalize them. To provide individualized care for their elders they hire home eldercare assistants (commonly known as "badanti") and these positions are almost exclusively filled by migrant women from East Europe. The relatively low cost of employing migrant workers puts this kind of private arrangement within reach of even lower middle-class families (Glucksmann and Lyon, 2006).

The simple label 'home eldercare work' encompasses a variety of work situations, yet suggests a job more homogeneous than the occupation actually is. In order to better

understand the requirements of this occupation it is important to define what the label actually means.

The first division runs between live-in eldercare work, which requires cohabiting with the elders 24 hours a day, usually for a minimum of five to a maximum of seven days a week, and live-out eldercare work, which is usually defined by a shift of eight hours a day five days a week. The other distinction is related to the physical and mental conditions of the elders. Some care workers tend non-self-sufficient elders with various kinds of physical or mental disabilities ranging from Alzheimer's and Parkinson's to complete paralysis, while others simply provide companionship to frail elders, who, while self-sufficient, do not feel safe left alone. These different jobs generate different relationships, needs and conflicts but also share many similarities.

For this reason the first study aims to investigate the profiles of associations of work characteristics, individual differences, cultural dimensions, appraisals and health outcomes in these women workers.

7.3.2 Hypotheses

Hypothesis one:

The experimental hypothesis predicts that the negative influence of job characteristics on perceived job satisfaction/stress and psychophysical health conditions would be greatest in combination with individual characteristics and ethnicity dimensions in the Eastern European care workers for elderly.

Moreover the negative influence of job characteristics on psychophysical health conditions would be greatest adding perceived job satisfaction/stress (appraisals) in combination with individual characteristics and ethnicity dimensions.

Hypothesis two:

The experimental hypothesis predicts that there will be significant profiles of associations between individual differences, work characteristics, ethnicity dimensions, perceived job satisfaction/stress and health outcomes in the Eastern European eldercare workers.

In particular the influence of individual differences, psychosocial job characteristics and cultural dimensions will be associated with perceived job satisfaction/stress.

In the prediction of psychophysical health outcomes, negative coping and Type A personality behaviours, work demands, specific ethnicity dimensions and perceived work stress will be associated with high levels of anxious-depressive disorders, relational disorders and physical problems. Work resources and rewards, positive coping, specific acculturation strategies and perceived job satisfaction will be associated with low levels of psychophysical disorders. Furthermore some significant interaction effects will be evaluated on each health outcome.

7.4 Sample and Materials

The questionnaire shown in the previous chapters (see sections 3.3 and 3.4) was individually submitted to 250 Eastern European care workers recruited from different associations of immigrants around the biggest cities of Naples and Caserta. To control the quality of data collection, the questionnaire was submitted directly during group meetings with volunteer psychologists who were familiar with the questionnaire. All the women cohabit with the elders 24 hours a day, usually for a minimum of five to a maximum of seven days a week. Some care workers tend non-self-sufficient elders, while others simply provide companionship to frail elders. Their mean age was 43.18 (SD= 4.25).

7.5 Data Analyses

The statistical analyses carried out using SPSS-X for the Eastern European care workers sample are reported in chapter 6, section 6.4.

7.6 Results

7.6.1 Descriptive Statistics

Table 7.2 below shows descriptive statistics for gender, age, ethnicity, education, marital status, type of job, work status, type of contract.

Table 7.2: Descriptive statistics of Eastern European workers (Age Mean= 43.18; SD= 4.25)

Descriptives	N	%
Gender		
Female	250	100
Marital Status		
Married	237	94.8
Unmarried	13	5.2
Education		
Middle School	4	1.6
High School	236	94.4
Degree	10	4.0
Work Status		
Part-time	17	6.8
Full-time	233	93.2
Contract type		
Fixed term contract	243	97.2
Temporary/casual	7	2.8

7.6.2 Combined effects and Total score

In accordance with the first hypothesis of this part of the study, this section outlines the calculation of a composite variable designed to encompass a wide range of variables and the pattern of effects subsequently observed on perceived job satisfaction/stress and psychophysical health conditions (as reported in the chapter 6 section 6.7.2). Unlike the whole sample, in the computing of the total score the factors Search Identity-Adoption of the

host culture and Affirmation-Maintenance culture were included and the perceived racial discrimination factor was excluded because these workers live with their employer and this variable is not significant.

Table 7.3 below shows the effects associated with exposure to Negative Occupational-Cultural Factors Score on perceived job satisfaction and work stress.

Table 7.3: Multi-variable associations of Total Negative Occupational-Cultural Factors Score with perceived job satisfaction and job stress

Outcomes		OR	CI
Perceived job satisfaction	1st tertile	1.00	
	2nd tertile	.516	.293-.907
	3rd tertile	.442	.219-.892
Perceived job stress	1st tertile	1.00	
	2nd tertile	1.234	.678-2.476
	3rd tertile	2.162	1.074-4.221

The likelihood of reporting perceived job satisfaction decreases where exposure to negative occupational-cultural factors is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels.

 Furthermore the likelihood of reporting perceived job stress increases where exposure to negative occupational-cultural factors is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. Then differences in the size of the odds ratios were found at the second and third tertiles and the effects were linear.

Table 7.4 below shows the effects associated with exposure to Negative Occupational-Cultural Factors Score on Anxious-Depressive disorders, General health and Relational disorders.

Table 7.4: Multi-variable associations of Total Negative Occupational-Cultural Factors Score with Anxious-Depressive disorders, General health and Relational disorders

Outcomes		OR	CI
Anxious-Depressive Disorders	1st tertile	1.00	
	2nd tertile	1.272	.678-2.386
	3rd tertile	4.883	2.384-9.999
General Health	1st tertile	1.00	
	2nd tertile	1.142	.635-2.176
	3rd tertile	2.880	1.398-5.920
Relational Disorders	1st tertile	1.00	
	2nd tertile	2.311	1.212-4.405
	3rd tertile	3.235	1.735-6.035

The likelihood of reporting Anxious-Depressive disorders, Relational disorders and poor general health increases where exposure to negative occupational-cultural factors is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. Then significant differences in the size of the odds ratios were found at the second and third tertiles particularly for Anxious-Depressive disorders.

The effects were linear because likelihood of reporting these health outcomes increased as a function of level of exposure to negative occupational-cultural factors.

These findings showed that for Eastern European care workers the likelihood of suffering Anxious-Depressive disorders was higher than the other two health conditions (at the 3rd tertile) while the likelihood of suffering Relational disorders was higher than the other two health conditions at the 2nd tertile for the moderate group.

Moreover it was evaluated whether the influence of job characteristics on psychophysical health conditions would be greatest including perceived job satisfaction/stress in combination with individual characteristics and ethnicity dimensions (NOCAF total score as reports in chapter 6).

Table 7.5 below shows the effects associated with exposure to NOCAF on Anxious-Depressive disorders, General health and Relational disorders.

Table 7.5: Multi-variable associations of NOCAF with Anxious-Depressive disorders, General health and Relational disorders

Outcomes		OR	CI
Anxious-Depressive Disorders	1st tertile	1.00	
	2nd tertile	1.126	.561-2.253
	3rd tertile	4.362	2.185-8.732
General Health	1st tertile	1.00	
	2nd tertile	1.091	.545-2.182
	3rd tertile	2.645	1.264-5.813
Relational Disorders	1st tertile	1.00	
	2nd tertile	1.862	.931-3.623
	3rd tertile	2.941	1.475-5.882

The likelihood of reporting Anxious-Depressive disorders, Relational disorders and poor general health increases where exposure to NOCAF is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. Comparing with the previous table the odds ratios decrease at the 3rd tertile for anxious-depressive disorders and relational disorders. Data confirm the influence of the appraisals and in the following sections the associations of each factor with health outcomes will clarify the potential impact of job satisfaction.

7.6.3 Logistic regression analyses: independent variables on health outcomes

In accordance with hypothesis two, logistic regression analyses were carried out to explore the main significant effects of individual differences, psychosocial job characteristics and cultural dimensions on perceived job satisfaction/stress (tables 7.6, 7.7 below) and the main and the potential interaction effects of individual differences, work characteristics, ethnicity dimensions and appraisals on psychophysical outcomes in the Eastern European care workers (see tables 7.8, 7.9, 7.10 below).

In accordance with the results reported for the model in the sample as whole the same interaction variables chapter 6 (section 6.7.3) are considered but in each ethnic group findings were not significant. Crosstabulations and chi square analyses are reported in appendix 7.2.

Table 7.6: Multi-variable associations of significant main effects with perceived job satisfaction

Variables	OR	CI
Work Demands		
Low	1.00	
High	.298	.138-.644
Rewards		
Low	1.00	
High	2.996	1.446-6.208
Emotional Coping		
Low	1.00	
High	.491	.236-.991
Objective Coping		
Low	1.00	
High	2.032	1.033-3.995
Type A behaviour		
Low	1.00	
High	.262	.126-.545
Affirmation/Maintenance culture		
Low	1.00	
High	3.146	1.572-6.296

Table 7.6 shows the significant multivariable associations of individual differences, work characteristics and ethnicity dimensions on perceived job satisfaction. The group of Eastern European workers who perceived high levels of work demands, who favored emotional coping and Type A behaviours were less likely to perceive job satisfaction. Moreover those with high perception of rewards, with high recourse to objective coping and an affirmation/maintenance culture were more likely to perceive job satisfaction.

Table 7.7: Multi-variable associations of significant main effects with perceived job stress

Variables	OR	CI
Rewards		
Low	1.00	
High	.521	.257-.981
Search Identity/Adoption of the host culture		
Low	1.00	
High	2.128	1.202-3.766

Table 7.7 shows the significant multivariable associations of individual differences, work characteristics and ethnicity dimensions on perceived job stress. The group of Eastern European workers with high perception of rewards were less likely to perceive job stress while those who favored a search identity/adoption of the host culture were more likely to perceive job stress.

Table 7.8: Multi-variable associations of main effects with Anxious-Depressive disorders

Anxious-Depressive disorders		
	OR	C.I.
Work characteristics		
Work demands		
Low	1.00	
High	4.006	2.254-7.118*
Intrinsic/Extrinsic Rewards		
Low	1.00	
High	.920	.482-1.756
Work resources		
Low	1.00	
High	.870	.315-2.405
Coping styles		
Emotional-relational coping		
Low	1.00	
High	.782	.391-1.562
Objective coping		
Low	1.00	
High	.739	.396-1.381
Personality		
Type A behavior		
Low	1.00	
High	2.586	1.418-4.716*
Negative affectivity		
Low	1.00	
High	2.386	1.370-4.156*
Social inhibition		
Low	1.00	
High	1.342	.695-2.590
Appraisals		
Perceived job satisfaction		
Low	1.00	
High	.527	.303-.916*
Perceived job stress		
Low	1.00	
High	1.498	.816-2.751
Cultural dimensions		
Perceived racial discrimination	n.s.	n.s.
Affirmation/Maintenance culture		
Low	1.00	
High	.885	.560-1.400
Search Identity/Adoption of the host culture		
Low	1.00	
High	1.137	.711-1.819

Table 7.8 above shows the multi-variable associations of individual differences, work characteristics, and appraisals on Anxious-Depressive disorders for the Eastern European group. Therefore, the group of Eastern European workers with perception of high work demands and who favored Type A behaviors and negative affectivity were more likely to

suffer anxious-depressive disorders while those who perceived high levels of job satisfaction were less likely to suffer this psychological disorders.

Table 7.9: Multi-variable associations of main effects with Relational disorders

	Relational disorders	
	OR	C.I.
Work characteristics		
Work demands		
Low	1.00	
High	5.328	2.740-10.361*
Intrinsic/Extrinsic Rewards		
Low	1.00	
High	.816	.400-1.663
Work resources		
Low	1.00	
High	.885	.453-1.730
Coping styles		
Emotional-relational coping		
Low	1.00	
High	.403	.221-.736*
Objective coping		
Low	1.00	
High	.752	.382-1.481
Personality		
Type A behavior		
Low	1.00	
High	2.747	1.393-5.417*
Negative affectivity		
Low	1.00	
High	1.415	.706-2.837
Social inhibition		
Low	1.00	
High	1.548	.842-2.844
Appraisals		
Perceived job satisfaction		
Low	1.00	
High	.427	.211-.864*
Perceived job stress		
Low	1.00	
High	1.181	.610-2.287
Cultural dimensions		
Perceived racial discrimination	n.s.	n.s.
Affirmation/Maintenance culture		
Low	1.00	
High	.737	.452-1.202
Search Identity/Adoption of the host culture		
Low	1.00	
High	1.456	.921-2.302

Table 7.9 shows that the group of Eastern European workers who perceived high levels of work demands and who favored Type A behaviors were more likely to suffer relational

disorders while those with high recourse to emotional coping were less likely to suffer this psychological disorder. Also with respect to this psychological outcome the association between perceived job satisfaction and lower likelihood of suffering relational disorders was shown.

Table 7.10: Multi-variable associations of main effects with General Health

General health		
	OR	C.I.
Work characteristics		
Work demands		
Low	1.00	
High	2.001	1.020-3.925*
Intrinsic/Extrinsic Rewards		
Low	1.00	
High	.751	.380-1.483
Work resources		
Low	1.00	
High	.858	.433-1.699
Coping styles		
Emotional-relational coping		
Low	1.00	
High	.640	.320-1.281
Objective coping		
Low	1.00	
High	.297	.158-.559*
Personality		
Type A behavior		
Low	1.00	
High	3.141	1.585-6.223*
Negative affectivity		
Low	1.00	
High	.955	.467-1.953
Social inhibition		
Low	1.00	
High	1.518	.754-3.054
Appraisals		
Perceived job satisfaction		
Low	1.00	
High	.856	.414-1.770
Perceived job stress		
Low	1.00	
High	1.334	.651-2.734
Cultural dimensions		
Perceived racial discrimination	n.s.	n.s.
Affirmation/Maintenance culture		
Low	1.00	
High	.465	.243-.890*
Search Identity/Adoption of the host culture		
Low	1.00	
High	1.373	.713-2.645

Finally data reported in table 7.10 showed that the Eastern European women who perceived high levels of work demands and who favored Type A behaviors were more likely to suffer poor health, while those with high recourse to objective coping and affirmation/maintenance culture behaviors were less likely to report poorer general health.

7.7 Summary

The following table highlights statistically significant findings on health outcomes and they will be discussed in more detail (in accordance with the two hypotheses) with those from the other two studies in the last section of the chapter.

Eastern European care workers				
Perceived job satisfaction	**Perceived job stress**	**Anxious-depressive disorders**	**Relational disorders**	**General health**
-Work demands -Rewards -Emotional coping -Objective coping -Type A behavior -Affirmation/Maintenance culture	- Rewards -Search Identity/Adoption of the host culture	-Work demands -Type A behavior - Negative affectivity - Job satisfaction	-Work demands -Emotional coping -Type A behavior - Job satisfaction	-Work demands -Objective coping -Type A behavior -Affirmation culture

7.8 Study two: Psychosocial aspects in Moroccan and Italian factory workers

7.8.1 Stress in factory workers: a literature review and the Italian background

Before analyzing the application of the model in the Moroccan factory workers, the literature on stress in factory workers is reviewed in order to underline the potential risk factors related to this type of job.

Factory workers develop a wide variety of occupational illnesses during their working lives, manifested in physical and psychological symptoms.

The literature on the mental health of factory workers from international studies suggests that depressive symptoms may be common among migrant workers. Gender differences in the mental health status in various populations have been observed (Seedat et al., 2009). Most research on workers' health fails to elucidate the relationship between the impacts of economic factors, especially income levels, on mental illness. One study in Zhejiang Province showed an association between better mental health status (measured by SF-36 mental health scale) and higher salary (Li et al., 2007).

The close association between relationships at work and psychological strain was also found among factory workers in large Korean manufacturing companies (Choi et al., 2001).

In accordance with Inoue et al. (2009) in a sample of 243 Japan manufacturing factory workers procedural justice and interactional justice were significantly and negatively associated with psychological distress; reward at work (or ERI) significantly mediated between procedural justice or interactional justice and psychological distress and worksite support significantly mediated between procedural justice or interactional justice and work engagement. Among this sample, some workers feel intense psychological pressure because their supervisors are quite critical. In addition, extensive restructuring of the

labour market, the increased demand for skilled workers and competition pressures that demand higher productivity levels, put workers at increased risk of exposure to high psychological job demands and job insecurity.

A study on physical health conditions among Malay workers in a battery manufacturing factory in Singapore reported higher blood lead concentration possibly due to oral ingestion of lead through eating with their fingers (Chia, Chia and Ong, 1991). Another study conducted by Chia et al (1996) found significant differences in the median and ulnar nerves of lead battery workers, adjusted for age, ethnic group, smoking and drinking habits.

A study from the USA has found a highly significant association of blood lead levels with past exposure in lead-battery workers, after making allowance for job category, seniority, age, ethnicity, gender, and smoking habit (Hodgkins et al., 1991).

A study in Thailand (Sornprasit, 2001) has reported job strain among factory workers in particular in rubber-glove manufacture. These workers in a rubber-glove factory are thought to be at high risk of job strain since during the manufacturing process, they are exposed to a work environment contaminated with dust, talcum powder, chemical by products, noise, repetitive motion, frequent lifting, and shift work which may lead to the development of job strain, physical diseases and risk of accidents and injuries (NIOSH, 1999.

In developed countries, overload is negatively related to satisfaction, but it is viewed positively among workers in many under-developed countries because of over-time pay (Jamal, 1999). If over-time work yields increased income for factory-workers in China, then long work hours may not be an issue (Kurz, 2002; London et al., 2002; Milkie et al., 2004).

Before turning to the data analysis our data we describe briefly the Italian background.

Morocco remains a major sender of migrants with annual flows estimated at 140,400 individuals (OECD. stat). During the 1960s, emigration from Morocco was mainly directed towards France, Belgium and the Netherlands. In the 1980s, however, after limitations had been put in place by the traditional receiving countries in Europe, Moroccan low−skilled often irregular migration increased in Spain and Italy.

In many respects, the initiation and rapid consolidation of Moroccan migration to Italy exemplifies the history of immigration in Italy. Moroccan migration to Italy commenced in the 1970s, however it remained limited until the 1990s. It began as a form of free movement prior to the introduction of visa requirements to enter Italian territory,

Entering the country by land or sea, Moroccans often obtain residence permits as a result of one of the regular amnesties for undocumented migrants granted by Italian governments or, paradoxically, within the system of annual quotas for entry of foreign workers (Colombo 2008).

By 2010, the Moroccan community in Italy, the third largest foreign community in the country, had a population of 431,529 people. According to ISTAT, in January 2010, over half of the Moroccans residing in Italy were living in four northern regions; Lombardy (104,606), Emilia Romagna (67,262), Piedmont (62,366) and Veneto (56,704). In southern Italy, the majority of Moroccans reside in Campania (12,267), Sicily (11,468) and Calabria (10,737) (ISTAT 2010; Mghari and Fassi Fihri, 2010).

Just over half (59%) of Moroccans resident in Italy are men. Their average age is 35 years and the average length of time spent in Italy is just under five years (4.9). Most Moroccans in Italy have secondary school education (57%). Nearly a fifth have primary school education (18.8%), while over a fifth is literate but do not have any qualifications.

Around 73% of Moroccans resident in Italy are actively engaged in the Italian labor market, this proportion rising to 86.1% among men and falling to 43.3% among women. The average

annual wage of Moroccan workers is €11,437, which is slightly higher than the average for immigrants in Italy in general (€10.343). Moroccans are also more likely to be employed with fixed-term contracts than other large foreign communities in Italy - 19.9% compared to the average of 15.6%. Due to low female employment, they have a higher unemployment rate than the other large foreign communities in Italy - in 2006, it was 10.8%.

The first Moroccan migrants in Italy worked in agriculture or sold Moroccan carpets and artisanal products. Moroccans then moved into other sectors such as construction, small industry and cleaning services. Today, just under 7% of Moroccans are employed in agriculture, 48.9% in industry (including 19% in construction) and 42.5% in services. By 2008, 78.5% of active Moroccans were employed, while 19% were self-employed and little over 2% searching for work. Moroccans are the migrant group with the largest number of businesses owners; there were 35,308 Moroccan business owners in 2010 (out of a total of 213,267 foreign business owners). Two-thirds of Moroccan owned businesses are in the trade sector, under a fifth in construction, five percent in transport and little over one percent in manufacturing industry (ISTAT, 2010; Mghari and Fassi Fihri, 2010).

Moroccan settlement in Italy is reflected in relatively high levels of family reunification and naturalization. For example, in 2003, Moroccan citizens constituted 6% of all visas issued to foreign nationals for employment and 13% of those issued for family reunification. Moroccans are the immigrant group with the highest number of cases of naturalization. In 2006, 3,295 Moroccans became Italian citizens, followed by 795 Albanians. Furthermore, Moroccan men have the highest rate of intermarriage with Italian women of all foreign groups.

On the basis of these issues and the suggested model this part of study aims to investigate the profiles of associations of work characteristics, individual differences, cultural dimensions, appraisals and health outcomes in these workers compared to the Italians.

7.8.2 Hypotheses

Hypothesis one:

The experimental hypothesis predicts that the negative influence of job characteristics on perceived job satisfaction/stress and psychophysical health conditions would be greatest in combination with individual characteristics and ethnicity dimensions in Moroccan factory workers.

Moreover the negative influence of job characteristics on psychophysical health conditions would be greatest including perceived job satisfaction/stress (appraisals) in combination with individual characteristics and ethnicity dimensions.

Hypothesis two:

The experimental hypothesis predicts that there will be significant different profiles of associations between individual differences, work characteristics, ethnicity dimensions, perceived job satisfaction/stress and health outcomes in Moroccan and Italian factory workers.

In particular negative coping and personality behaviours, work demands and perceived work stress will be associated with high levels of Anxious-depressive disorders, Relational disorders and Physical problems. Work resources and rewards, positive coping and perceived job satisfaction will be associated with low levels of psychophysical disorders.

Furthermore some significant interaction effects will be evaluated on each health outcome.

7.9 Sample and Materials

The questionnaire shown in the previous chapters (see sections 3.3 and 3.4) was individually submitted to 250 Moroccan and 100 Italian factory workers involved in the geographic areas of Naples and Caserta. Moroccan workers were recruited from different associations of

immigrants around the biggest cities of Naples and Caserta. Most of them lived alone or with some colleagues but almost all of them were married and had already applied for family reunification and naturalization. The age mean of them was 40.78 (SD= 3.51).

7.10 Data Analyses

The statistical analyses carried out for the Moroccan and Italian factory workers were the same reported in the study one (see section 6.4).

7.11 Results

7.11.1Descriptive Statistics

Table 7.11 below shows the descriptive statistics for gender, age, ethnicity, education, type of job, work status, type of contract for the Moroccan factory workers.

Table 7.11: Descriptive statistics of Moroccan factory workers (Age Mean= 40.78; SD= 3.51)

Descriptives	N	%
Gender		
Female	25	10
Male	225	90
Marital Status		
Married	231	83.2
unmarried	19	16.8
Education		
Middle School	143	57.2
High School	107	42.8
Work Status		
Part-time	3	1.2
Full-time	247	98.8
Contract type		
Fixed term contract	85	34.1
Temporary/casual	165	65.9

Table 7.12: Descriptive statistics of Italian factory workers (Age Mean= 42.78; SD=4.34)

Descriptives	N	%
Gender		
Male	100	100
Marital Status		
Married	92	92
unmarried	8	8
Education		
Middle School	7	7
High School	93	93
Work Status		
Full-time	100	100
Contract type		
Fixed term contract	19	19
Permanent contract	81	81

Between the two groups we found some differences in particular with respect to contract type, salary and age. In fact most of Italian workers had permanent contracts with a salary of more than 1000 euros/month compared to more than half of Moroccans that had temporary/casual contracts for around 600 euros/month. These data confirm the studies reported in the literature in the last part of previous chapter about differences between native and migrant workers.

7.11.2 Combined effects and Total score

In accordance with the first hypothesis of this part of the study, the influence of individual differences, psychosocial job characteristics and cultural dimensions on perceived job satisfaction/stress and psychophysical health conditions (as reported in the chapter 6 section 6.7.2 and in the previous study one) was evaluated among the Moroccan group.

In the computing of the total score the perceived racial discrimination at work factor was included because Moroccans (as the Ghanaians) worked in an environment where there were also Italian colleagues and they had experienced episodes of discrimination. Therefore the total NOCF exposure variable ranged 0 to 11 and also for these workers the factor

Affirmation-Maintenance culture was associated with low levels negative health outcomes and recoded in the same way as for the previous ethnic group.

The effects associated with exposure to Negative Occupational-Cultural Factors Score on perceived job satisfaction and work stress were not significant as reported in table 7.13 below.

Table 7.13: Multi-variable associations of Total Negative Occupational-Cultural Factors Score with perceived job satisfaction/stress.

Outcomes		OR	CI
Perceived job satisfaction	1st tertile	1.00	
	2nd tertile	.933	.510-.1.808
	3rd tertile	.817	.461-.1.663
Perceived job stress	1st tertile	1.00	
	2nd tertile	1.194	.634-2.250
	3rd tertile	1.523	.809-2.866

Then table 7.14 below shows the effects associated with exposure to Negative Occupational-Cultural Factors Score on Anxious-Depressive disorders, General health and Relational disorders.

Table 7.14: Multi-variable associations of Total Negative Occupational-Cultural Factors Score with Anxious-Depressive disorders, General health and Relational disorders

Outcomes		OR	CI
Anxious-Depressive Disorders	1st tertile	1.00	
	2nd tertile	1.923	1.012-4.011
	3rd tertile	2.431	1.325-5.329
General Health	1st tertile	1.00	
	2nd tertile	1.652	.943-3.193
	3rd tertile	1.990	1.104-4.132
Relational Disorders	1st tertile	1.00	
	2nd tertile	1.852	1.003-3.321
	3rd tertile	3.061	1.631-6.311

The likelihood of reporting Anxious-Depressive disorders, Relational disorders and poor general health increases where exposure to negative occupational-cultural factors is moderate

(i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. Then relevant differences in the size of the odds ratios were found at the second and third tertiles on Anxious-Depressive disorders, Relational disorders and the effects were linear.

These findings showed that for Moroccan workers the likelihood of suffering Relational disorders was higher than the other two health conditions (at the 3rd tertile).

Furthermore the effects associated with exposure to Negative Occupational-Cultural-Appraisals Factors Score on Anxious-Depressive disorders, General health and Relational disorders are shown in table 7.15 below.

Table 7.15: Multi-variable associations of NOCAF with Anxious-Depressive disorders, General health and Relational disorders

Outcomes		OR	CI
Anxious-Depressive Disorders	1st tertile	1.00	
	2nd tertile	1.816	1.004-3.671
	3rd tertile	2.127	1.065-4.279
General Health	1st tertile	1.00	
	2nd tertile	1.859	1.007-3.683
	3rd tertile	2.559	1.274-5.112
Relational Disorders	1st tertile	1.00	
	2nd tertile	1.631	. .801-3.225
	3rd tertile	3.118	1.701-6.407

The likelihood of reporting Anxious-Depressive disorders, Relational disorders and poor general health increases where exposure to NOCAF is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. Comparing with the previous table the odds ratios increase at the 3rd tertile in particular for poor general health.

7.11.3 Logistic regression analyses: independent variables on health outcomes

In accordance with hypothesis two, logistic regression analyses were carried out to explore the main significant effects of individual differences, psychosocial job characteristics and cultural dimensions on perceived job satisfaction/stress (tables 7.16, 7.17 below) and the main and the interaction effects of individual differences, work characteristics, ethnicity dimensions and appraisals on psychophysical outcomes in Moroccan and Italian factory workers (see tables 7.18, 7.19, 7.20 below).

Moreover data on perceived job satisfaction/stress were excluded for the Italian factory workers because there was very few significant associations of all the factors with these appraisals (as reported in section 7.2.2) and not significant interaction effects were found. Crosstabulation and chi square analyses are reported in appendix 7.3.

Table 7.16: Multi-variable associations of significant main effects with perceived job satisfaction

Variables	OR	CI
Work Resources		
Low	1.00	
High	2.138	1.191-3.839
Emotional Coping		
Low	1.00	
High	.279	.131-.592
Search Identity/Adoption of the host culture		
Low	1.00	
High	.382	.206-.707
Perceived discrimination		
Low	1.00	
High	.409	.195-.861

Table 7.16 shows the significant multivariable associations of individual differences, work characteristics, ethnicity dimensions on perceived job satisfaction. The group of Moroccan workers with high recourse to emotional coping, a search identity/adoption of the host culture and who had experienced racial discrimination were less likely to perceive job satisfaction.

Moreover those with high perception of work resources were more likely to perceive job satisfaction.

Table 7.17: Multi-variable associations of significant main effects with perceived job stress

Variables	OR	CI
Work resources		
Low	1.00	
High	.408	.201-.821
Search Identity/Adoption of the host culture		
Low	1.00	
High	2.049	1.183-3.547

Table 7.17 shows the significant multivariable associations of individual differences, work characteristics, ethnicity dimensions on perceived job stress. The group of Moroccan workers with high perception of work resources were less likely to perceive job stress while those who favored a search identity/adoption of the host culture were more likely to perceive job stress.

Table 7.18: Multi-variable associations of main effects with Anxious-Depressive disorders

	Anxious-depressive disorders			
	Italian factory workers		Moroccan factory workers	
	OR	C.I.	OR	C.I.
Work characteristics				
Work demands				
Low	1.00		1.00	
High	1.954	1.113-3.429 *	1.140	.656-1.982
Intrinsic/Extrinsic Rewards				
Low	1.00		1.00	
High	.128	.066-.248*	.339	.172-.668*
Work resources				
Low	1.00		1.00	
High	.821	.291-2.319	.916	.333-2.517
Coping styles				
Emotional-relational coping				
Low	1.00		1.00	
High	.766	.383-1.532	.857	.454-1.616
Objective coping				
Low	1.00		1.00	
High	.815	.405-1.638	.801	.401-1.599
Personality				
Type A behavior				
Low	1.00		1.00	
High	1.341	.681-2.642	1.263	.723-2.205
Negative affectivity				
Low	1.00		1.00	
High	1.371	.845-2.224	1.961	1.115-3.448*
Social inhibition				
Low	1.00		1.00	
High	1.318	.694-2.502	.343	.192-.613*
Appraisals				
Perceived job satisfaction				
Low	1.00		1.00	
High	.528	.279-1.000*	.804	.403-1.606
Perceived job stress				
Low	1.00		1.00	
High	1.282	.650-2.528	1.519	.836-2.760
Cultural dimensions				
Perceived racial discrimination				
Low	n.s.	n.s.	1.00	
High			1.140	.656-1.982
Affirmation/Maintenance culture				
Low			1.00	
High	n.s.	n.s.	.773	.429-1.393
Search Identity/Adoption of the host culture				
Low	n.s.	n.s.	1.00	
High			1.156	.581-2.300

Table 7.18 shows the significant multivariable associations of individual differences, work characteristics on Anxious-Depressive disorders for Moroccan and Italian workers.

Therefore, the group of migrant workers with high perception of rewards were less likely to suffer anxious-depressive disorders as were the group of Italian workers, while those who favored negative affectivity behaviors were more likely to report this psychological outcome. In this case for Italian workers with high recourse to rewards the likelihood of suffering this disorder was lower than that for the Moroccans but the differences were not statistically significant.

Moreover results on social inhibition seem unexpected because on the basis of the literature this behavioral pattern increases the likelihood of reporting psychological disorders but for this ethnic group data show the opposite. Considering the same type of workers varying in ethnicity on this association there were significant differences between Moroccan and Italian factory workers (the confidence intervals did not overlap). These results suggest the influence of ethnicity in this association and the need to look in more detail whether this behavioral pattern could be related to the protective role of an affirmation/maintenance culture strategy in coping with psychological problems.

Among Italian workers, the associations between high work demands and the risk of reporting anxious-depressive disorders and between high perception of job satisfaction and low likelihood of suffering these psychological disorders was shown.

Table 7.19: Multi-variable associations of main effects with Relational disorders

	Relational disorders			
	Italian factory workers		Moroccan factory workers	
	OR	C.I.	OR	C.I.
Work characteristics				
Work demands				
Low	1.00		1.00	
High	1.872	1.110-3.158*	1.061	.593-1.898
Intrinsic/Extrinsic Rewards				
Low	1.00		1.00	
High	.841	.412-1.717	.361	.210-.621*
Work resources				
Low	1.00		1.00	
High	.352	.174-.711*	.840	.419-.1.685
Coping styles				
Emotional-relational coping				
Low	1.00		1.00	
High	.741	.381-1.441	.921	.476-1.781
Objective coping				
Low	1.00		1.00	
High	.851	.431-1.682	.703	.352-1.404
Personality				
Type A behavior				
Low	1.00		1.00	
High	1.145	.577-2.272	.437	.255-.749*
Negative affectivity				
Low	1.00		1.00	
High	1.962	1.035-3.718*	1.059	.577-1.942
Social inhibition				
Low	1.00		1.00	
High	1.426	.726-2.802	.904	.470-1.738
Appraisals				
Perceived job satisfaction				
Low	1.00		1.00	
High	.852	.416-1.744	.943	.491-1.811
Perceived job stress				
Low	1.00		1.00	
High	1.235	.614-2.485	1.261	.633-2.511
Cultural dimensions				
Perceived racial discrimination				
Low	n.s.	n.s.	1.00	
High			2.181	1.152-4.130*
Affirmation/Maintenance culture				
Low			1.00	
High	n.s.	n.s.	.537	.264-1.091
Search Identity/Adoption of the host culture				
Low	n.s.	n.s.	1.00	
High			1.786	1.043-3.058*

Table 7.19 shows that the group of migrant workers who perceived high levels of rewards were less likely to suffer relational disorder as were those with high recourse to Type A behavior. In this case Type A behavior seems to be helpful in reducing the risk of reporting

relational disorders and it could be considered as an unexpected signal of integration because the competitive aspects related to this behavioral pattern are commonly associated in the literature with the risk of reporting psychophysical diseases.

Moreover in accordance with the literature, Moroccan workers with high recourse to a search identity/adoption of the host culture strategy and who had experienced racial discrimination were more likely to report relational disorders.

Among Italians workers, those who perceived high levels of work demands and who favored negative affectivity behaviors were more likely to report relational disorders and Italian factory workers with high perception of work resources were less likely to suffer this psychological disorder.

Table 7.20: Multi-variable associations of main effects with General Health

	General health			
	Italian factory workers		Moroccan factory workers	
	OR	C.I.	OR	C.I.
Work characteristics				
Work demands				
Low	1.00		1.00	
High	1.384	.734-2.609	1.525	.715-3.252
Intrinsic/Extrinsic Rewards				
Low	1.00		1.00	
High	.694	.353-1.363	.406	.212-.778*
Work resources				
Low	1.00		1.00	
High	.782	.386-1.586	.558	.269-1.158
Coping styles				
Emotional-relational coping				
Low	1.00		1.00	
High	.721	.361-1.440	.288	.130-.638*
Objective coping				
Low	1.00		1.00	
High	.791	.391-1.601	.564	.298-1.069
Personality				
Type A behavior				
Low	1.00		1.00	
High	2.176	1.167-4.058*	1.084	.589-1.996
Negative affectivity				
Low	1.00		1.00	
High	1.591	.801-3.159	.914	.458-1.825
Social inhibition				
Low	1.00		1.00	
High	1.449	.728-2.882	.668	.336-1.329
Appraisals				
Perceived job satisfaction				
Low	1.00		1.00	
High	.961	.474-1.949	.306	.158-.593*
Perceived job stress				
Low	1.00		1.00	
High	1.952	.989-3.853*	2.241	1.169-4.296*
Cultural dimensions				
Perceived racial discrimination				
Low	n.s.	n.s.	1.00	
High			1.245	.621-2.496
Affirmation/Maintenance culture				
Low			1.00	
High	n.s.	n.s.	.675	.347-1.315
Search Identity/Adoption of the host culture				
Low	n.s.	n.s.	1.00	
High			1.251	.652-2.402

Finally data reported in table 7.20 showed that the group of Moroccan workers who perceived high levels of rewards, job satisfaction and who favored emotional/relational

coping were less likely to suffer poor health. Moreover perceived work stress was associated with the risk of reporting poorer general health among both groups and for Moroccan workers the likelihood of suffering this disorder was higher than that for the Italians but the difference were not statistically significant.

Finally the Italians workers who favored Type A behaviors were more likely to report poor health conditions in accordance with the literature on Type A and physical diseases (Ganster, Schaubroeck, Sime and Mayes, 1999; Rosenmann, 1991).

7.12 Summary tables

Moroccan factory workers				
Perceived job satisfaction	**Perceived job stress**	**Anxious-depressive disorders**	**Relational disorders**	**General health**
--Work resources -Emotional coping -Search Identity/Adoption of the host culture -Racial discrimination	-Work resources -Search Identity/Adoption of the host culture	- Rewards -Negative Affectivity -Social inhibition	- Rewards -Type A behavior -Search Identity/Adoption of the host culture -Racial discrimination	-- Rewards -Emotional coping -Job satisfaction -Perceived job stress

Italian factory workers		
Anxious-depressive disorders	**Relational disorders**	**General health**
- Work demands - Rewards - Job satisfaction	-Work demands -Work resources - Negative Affectivity	-Type A behavior -Perceived job stress

7.13 Study three: Psychosocial aspects in Ghanaian and Italian masons

7.13.1 Stress in construction: a literature review and the Italian background

Before analyzing the application of the model in the Ghanaian masons, the literature on stress in the construction sector is reviewed in order to underline the potential risk factors related to this type of job.

In the UK, work-related musculoskeletal disorders have a statistically higher prevalence in four out of the eight industry sectors - agriculture, construction, health and social work, and manufacturing are the highest overall self-reported work-related illness (HSE, 2004).

According to the Bureau of Labor Statistics, construction workers are at significant risk of musculoskeletal disorders (MSDs) with incident rates of 41.4 (per 10,000 workers) compared to 35.4 for all industries (BLS, 2007). In 2005 the masonry industry had the highest rate of back injuries and illnesses (75.4 per 10,000 full time workers) out of all construction trades and bricklayers ranked sixth for overexertion injuries resulting in time away from work (43 per 10,000 full time workers) (CPWR, 2008). Reports of upper extremity pain and other MSDs are common in the masonry trade (Stenlund et al., 2002, Cook et al., 1996; CPWR, 2008). Masonry work is physically demanding, requiring repetitive, awkward, and static postures in potentially harsh outdoor environments. Masons are required to regularly lift and maneuverer heavy building materials such as concrete masonry unit (CMU) block with their arms above their shoulders when laying higher courses or when lifting over vertical rebar or electrical or plumbing conduits. Research has shown that in other construction trades working with hands above shoulder level leads to reports of shoulder discomfort (Holmstrom, 1992).

In particular, masons who work with block must contend with repetitively handling heavy CMU block (Anton et al., 2005). The risk factors for back and shoulder injuries associated with handling block include block weight, frequency of lifting, height from which block and

mortar are lifted, height at which block is placed, buttering activities (applying and smoothing mortar), distance of the work from the mason, and high expected production rates (Entzel et al., 2007). Construction Safety Association of Ontario (CSAO) researchers reported in 2002 that 58% of all lost time injuries among masons could be directly attributed to installation and manual materials handling activities (CSAO, 2002). It is common for masons to lay 200 or more CMU blocks per day (Van der Molen et al., 2008).

Masons who lay large sandstone blocks are engaged in building and renovating houses, offices and industrial complexes using blocks weighing from 6 kg to more than 48 kg (Van Der Molen et al., 2004b). Laying blocks involves a high physical workload and is associated with low back disorders among masons. The physical nature of masonry work (Anton et al., 2005) or barriers to behavioural change (Van Der Molen et al., 2005), however, hinder implementation and use of such engineering controls. Manual handling of large blocks, therefore, still occurs at many work sites, which suggests that it may be useful to ask whether there is an optimal block weight that would meet acceptable work demands and physical workload.

In France, 107 injuries with sick leave occurred per 1,000 workers in 1999 (CNAMTS, 2001). Several studies have shown the danger of construction jobs (Koh and Jeyaratnam, 1998) and the high death rate (Lipscomb et al., 2010; Jackson and Loomis, 2002). Apart from environmental factors, other factors contribute especially age (Jackson and Loomis, 2002) or alcohol consumption (Lipscomb et al., 2010).

Nevertheless, there have been few investigations into the role of individual characteristics in non-fatal occupational injuries in the construction industry, and no one has taken into account several individual factors simultaneously.

An epidemiological case–control study has assessed the relationships between certain individual characteristics and occupational injuries in construction workers from a wide area

of France (Chau et al., 2004). It reported that age <30 years, sleep disorders, smoking, and no sporting activity were significant risk factors.

The workforce faces some predictable dangers, such as trauma from falls experienced by the roofer, steel worker, or labourer. Predictable occupational ailments include pneumoconiosis of the tunnel builder and the welder; the white finger of the jackhammer operator; low-back pain of the bricklayer; skin allergies of the mason; carpal tunnel syndrome of the iron worker or the electrician; kidney ailments of the painter and the roofer from exposure to solvents; lead poisoning of the bridge rehabilitation worker; asbestosis of the building demolition worker; and heat stress of the hazardous waste cleanup worker (from wearing moon suits).

The causes of work-related injuries are well-defined, which means they could relatively easily be prevented. But chronic occupational health risks are poorly defined, in terms of the relations between toxic exposures and health outcomes. In any case, the costs of injuries and illnesses are substantial.

In the last part of this section, the psychosocial aspects related to migration and the presence of this ethnic minority involved in this sector in Italy are reported.

Dating back to the mid-1970s, the majority of Ghanaian migrants to Italy originate from the southern region of Ghana and especially Ashanti. Mollel (2000) suggests that emigrants are more likely to be southerners than northerners because of the lower level of education and the consequent lack of opportunity to finance emigration in the north. The Ghanaians, many of whom live in Northern Italy, come from Kumasi and the villages around that town.

Emigration is more a family strategy than just an individual one (Amassari and Black, 2001; Kabki et al., 2004; Mboup, 2000).

This specific problem may be less common among Ghanaians in Italy, the majority of whom opted for family reunification before the mid-1990s as a sign of success.

These tendencies also affect work strategies. Ghanaians, women as well as men, find a reasonably satisfactory entry into the local labour markets.

Moreover, the presence of children implies a more complex interplay with the institutions of the receiving countries, and a consequent enhancement of the understanding of such institutions as primary and secondary schools, hospitals, cooperatives and associations providing help with children with learning difficulties (Riccio, 2003).

Concerning work strategies, Ghanaians are not a homogeneous community. Although the majority is formed of unskilled workers (mechanics, laborers in small and medium firms), one also finds skilled and educated migrants who are often obliged by a discriminatory labor market to accept jobs below their qualifications.

In particular in Southern Italy most of Ghanaians find support in religious communities that help them to find accommodation and jobs. Ghanaians worked mostly as masons in that part of Italy where the construction sector is focused on creating new buildings and new tourist services. For this reason the relative low cost of employing these workers on temporary contracts has increased migration and at the same time has created conflicts with the Italian unemployed. On the basis of the conditions related to this ethnic group and the suggested model, this third study aims to investigate the profiles of associations of work characteristics, individual differences, cultural dimensions, appraisals and health outcomes in these workers compared to the Italians.

7.13.2 Hypotheses

Hypothesis one:

The experimental hypothesis predicts that the negative influence of job characteristics on perceived job satisfaction/stress and psychophysical health conditions would be greatest in combination with individual characteristics and ethnicity dimensions in Ghanaian masons. Moreover the negative influence of job characteristics on psychophysical health conditions would be greatest including perceived job satisfaction/stress (appraisals) in combination with individual characteristics and ethnicity dimensions.

Hypothesis two:

The experimental hypothesis predicts that there will be significantly different profiles of associations between individual differences, work characteristics, ethnicity dimensions, perceived job satisfaction/stress and health outcomes in Ghanaian and Italian masons.

In particular negative coping and personality behaviours, work demands, racial discrimination, specific acculturation strategies and perceived work stress will be associated with high levels of Anxious-depressive disorders, Relational disorders and Physical diseases. Work resources and rewards, positive coping, specific acculturation strategies and perceived job satisfaction will be associated with low levels of psychophysical disorders.

Furthermore some significant interaction effects will be evaluated on each health outcome.

7.14   Sample and Materials

The questionnaire shown in the previous chapters (see sections 3.3 and 3.4) was individually submitted to 200 Ghanaian and 100 Italian masons involved in the geographic areas of

Naples and Caserta. Ghanaian workers were recruited from a religious association near the biggest cities of Naples and Caserta. Most of them lived alone or with some colleagues but almost all of them were married and were finding a regular job in order to apply for family reunification. Their age mean was 38.78 (SD= 4.32).

7.15 Data Analyses

The statistical analyses carried out for the Ghanaian and Italian masons were the same reported in the study one (see section 6.5).

7.16 Results

7.16.1Descriptive Statistics

Table 7.21 below shows the descriptive statistics for gender, age, ethnicity, education, type of job, work status, type of contract for the Ghanaian masons.

Table 7.21: Descriptive statistics of Ghanaian masons (Age Mean= 38.78; SD=4.32)

Descriptives	N	%
Gender		
Female	18	9
Male	182	91
Marital Status		
Married	200	100
Education		
Middle School	190	95
High School	10	5
Work Status		
Part-time	200	100
Contract type		
Fixed term contract	4	2
Temporary/casual	196	98

Table 7.22: Descriptive statistics of Italian masons (Age Mean= 40.61; SD=3.38)

Descriptives	N	%
Gender		
Male	100	100
Marital Status		
Married	100	100
Education		
Primary School	12	12
Middle School	83	83
High School	5	5
Work Status		
Part-time	99	99
Full-time	1	1
Contract type		
Fixed term contract	83	83
Temporary/casual	17	17

Between the two groups we found some differences in particular with respect to contract type, wage and age. Indeed most of Italian masons had fixed term contracts compared to almost all the Ghanaians that had temporary/casual contracts with a salary around 400 euros/month and, therefore, about half that of their Italian counterparts.

7.16.2 Combined effects and Total score

In accordance with the first hypothesis of this part of the study, the influence of individual differences, psychosocial job characteristics and cultural dimensions on perceived job satisfaction/stress and psychophysical health conditions (as reported in the chapter 6 section 6.7.2 and in the previous study one) was evaluated among the Ghanaian group.

The calculation of the NOCF scores was computed in the same way of the previous study on Moroccan workers. The only difference was with regard to the factor Search Identity/Adoption of the host culture that for this ethnic group was associated with low levels of negative health outcomes and recoded in the opposite way.

As for Moroccans, the effects associated with exposure to Negative Occupational-Cultural Factors Score on perceived job satisfaction and work stress were not significant as reported in table 7.23 below.

Table 7.23: Multi-variable associations of Total Negative Occupational-Cultural Factors Score with perceived job satisfaction/stress

Outcomes		OR	CI
Perceived job satisfaction	1st tertile	1.00	
	2nd tertile	.958	.611-.1.692
	3rd tertile	.896	.527-.1.522
Perceived job stress	1st tertile	1.00	
	2nd tertile	1.034	.410-2.609
	3rd tertile	1.686	.658-4.320

Table 7.24 below shows the effects associated with exposure to Negative Occupational-Cultural Factors Score on Anxious-Depressive disorders, General health and Relational disorders.

Table 7.24: Multi-variable associations of Total Negative Occupational-Cultural Factors Score with Anxious-Depressive disorders, General health and Relational disorders

Outcomes		OR	CI
Anxious-Depressive Disorders	1st tertile	1.00	
	2nd tertile	1.433	.720-2.933
	3rd tertile	2.780	1.237-5.227
General Health	1st tertile	1.00	
	2nd tertile	1.171	.523-2.432
	3rd tertile	1.821	.863-3.200
Relational Disorders	1st tertile	1.00	
	2nd tertile	1.433	.665-2.910
	3rd tertile	2.867	2.028-4.321

The likelihood of reporting Anxious-Depressive disorders and Relational disorders increases where exposure to negative occupational-cultural factors is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. Therefore linear effects were found at the second and third tertiles on Anxious-Depressive disorders, Relational disorders because the

likelihood of reporting these health outcomes increased as a function of level of exposure to negative occupational-cultural factors.

These findings showed that for Ghanaian workers the likelihood of suffering Relational disorders was quite similar to the other significant psychological outcome (at the 3rd tertile). Moreover table 7.25 below shows the effects associated with exposure to NOCAF on Anxious-Depressive disorders, General health and Relational disorders.

Table 7.25: Multi-variable associations of NOCAF with Anxious-Depressive disorders, General health and Relational disorders

Outcomes		OR	CI
Anxious-Depressive Disorders	1st tertile	1.00	
	2nd tertile	1.342	.670-2.685
	3rd tertile	2.531	1.157-5.067
General Health	1st tertile	1.00	
	2nd tertile	1.002	.491-2.107
	3rd tertile	1.715	.803-3.001
Relational Disorders	1st tertile	1.00	
	2nd tertile	1.316	.621-2.638
	3rd tertile	2.901	2.102-4.389

The likelihood of reporting Anxious-Depressive disorders, Relational disorders and poor general health increases where exposure to NOCAF is moderate (i.e. second tertile) until exposure reaches high (i.e. third tertile) levels. Comparing with the previous table it seems that the presence of perceived job satisfaction/stress did not significantly influence the associations with health outcomes because the odds ratios were quite similar.

7.16.3 Logistic regression analyses: independent variables on health Outcomes

In accordance with hypothesis two, logistic regression analyses were carried out to explore the main significant effects of individual differences, psychosocial job characteristics and

cultural dimensions on perceived job satisfaction (table 7.26) and the main and the interaction effects of individual differences, work characteristics, ethnicity dimensions and appraisals on psychophysical outcomes in Ghanaian and Italian masons (see tables 7.27, 7.28, 7.29 below). As in previous study (see section 7.11.3) data on perceived job satisfaction/stress were excluded for the Italian masons and not significant interaction effects were found. Crosstabulation and chi square analyses are reported in appendix 7.4.

Table 7.26: Multi-variable associations of main effect with perceived job satisfaction

Variables	OR	CI
Work demands		
Low	1.00	
High	.424	.212-.851
Search Identity/Adoption of the host culture		
Low	1.00	
High	4.052	1.523-8.104

Table 7.26 shows the significant multivariable associations of individual differences, work characteristics, ethnicity dimensions on perceived job stress. The group of Ghanaian workers with high perception of work demands were less likely to perceive job satisfaction while those who favored a search identity/adoption of the host culture were more likely to perceive job satisfaction.

Moreover the low levels of perceived job stress among Ghanaians (only N=26, 23% reported perceived work stress) may be probably due to the higher necessity to get money than the other two ethnic groups that allows them to cope with stress and over workload improving the extrinsic rewards (in accordance with Jamal, 1999; Kurz, 2002; London et al., 2002). This attitude makes them less vulnerable to work stress.

Table 7.27: Multi-variable associations of main effect with Anxious-Depressive disorders

	Anxious-depressive disorders			
	Italian masons		Ghanaian masons	
	OR	C.I.	OR	C.I.
Work characteristics				
Work demands				
Low	1.00		1.00	
High	1.120	.677-1.854	1.525	.828-2.808
Intrinsic/Extrinsic Rewards				
Low	1.00		1.00	
High	.357	.175-.727*	.753	.404-1.404
Work resources				
Low	1.00		1.00	
High	.988	.369-2.647	.781	.217-2.813
Coping styles				
Emotional-relational coping				
Low	1.00		1.00	
High	.466	.217-1.001*	.973	.490-1.933
Objective coping				
Low	1.00		1.00	
High	.918	.467-1.805	.426	.215-.844*
Personality				
Type A behavior				
Low	1.00		1.00	
High	1.290	.736-2.262	1.112	.569-2.174
Negative affectivity				
Low	1.00		1.00	
High	1.957	1.120-3.419*	1.353	.683-2.680
Social inhibition				
Low	1.00		1.00	
High	1.265	.655-2.443	1.277	.673-2.422
Appraisals				
Perceived job satisfaction				
Low	1.00		1.00	
High	.740	.385-1.422	.974	.483-1.962
Perceived job stress				
Low	1.00		1.00	
High	1.188	.604-2.335	1.349	.676-2.692
Cultural dimensions				
Perceived racial discrimination				
Low	n.s.	n.s.	1.00	
High			3.796	1.983-7.268*
Affirmation/Maintenance culture				
Low			1.00	
High	n.s.	n.s.	1.188	.626-2.255
Search Identity/Adoption of the host culture				
Low			1.00	
High	n.s.	n.s.	.695	.353-1.369

Table 7.27 shows the significant multivariable associations of individual differences and ethnicity dimensions on anxious-depressive disorders for Ghanaian and Italian workers. The group of Ghanaian workers with high recourse to objective coping were less likely to suffer

anxious-depressive disorders and those who had experienced racial discrimination were more likely to report this psychological outcome. Moreover, those of the Italian group with high perception of rewards and with high recourse to emotional coping were less likely to report this psychological outcome in contrast with those who favored negative affectivity. The two groups adopt different coping strategies to deal with stressful situations.

Table 7.28: Multi-variable associations of main effects with Relational disorders

| | Relational disorders | | | |
| | Italian masons | | Ghanaian masons | |
	OR	C.I.	OR	C.I.
Work characteristics				
Work demands				
Low	1.00		1.00	
High	1.971	1.014-3.829*	1.897	1.045-3.445*
Intrinsic/Extrinsic Rewards				
Low	1.00		1.00	
High	.458	.231-.907*	.931	.491-1.766
Work resources				
Low	1.00		1.00	
High	.766	.406-1.444	.963	.515-1.801
Coping styles				
Emotional-relational coping				
Low	1.00		1.00	
High	.823	.418-1.621	.802	.405-1.590
Objective coping				
Low	1.00		1.00	
High	.799	.390-1.637	.934	.468-1.865
Personality				
Type A behavior				
Low	1.00		1.00	
High	2.156	1.084-4.286*	1.385	.697-2.752
Negative affectivity				
Low	1.00		1.00	
High	1.341	.691-2.602	3.317	1.756-6.266*
Social inhibition				
Low	1.00		1.00	
High	1.382	.713-2.679	.897	.445-1.806
Appraisals				
Perceived job satisfaction				
Low	1.00		1.00	
High	.907	.455-1.808	.840	.413-1.710
Perceived job stress				
Low	1.00		1.00	
High	1.997	1.014-3.934*	1.282	.647-2.542
Cultural dimensions				
Perceived racial discrimination				
Low	n.s.	n.s.	1.00	
High			1.846	.934-3.649
Affirmation/Maintenance culture				
Low			1.00	
High	n.s.	n.s.	.774	.379-1.581
Search Identity/Adoption of the host culture				
Low			1.00	
High	n.s.	n.s.	.483	.264-.883*

Table 7.28 shows that the group of Ghanaian workers who perceived high levels of work demands were more likely to suffer relational disorders as were the Italian masons but for

migrants the likelihood of reporting this psychological outcome was a little greater (though not statistically different). Moreover Ghanaian workers who favored negative affectivity behaviors were more likely to suffer relational disorders and those with high recourse to a search identity/adoption host culture were less likely to report this psychological outcome.

Among Italians Type A behavior and perceived work stress were significantly associated with the risk of suffering this psychological outcome while perception of higher rewards was significantly associated with low risk of suffering relational disorders.

Table 7.29: Multi-variable associations of main effects with General Health

	General health			
	Italian masons		Ghanaian masons	
	OR	C.I.	OR	C.I.
Work characteristics				
Work demands				
Low	1.00		1.00	
High	2.111	1.076-4.142*	1.625	.716-3.690
Intrinsic/Extrinsic Rewards				
Low	1.00		1.00	
High	.734	.377-1.428	.818	.401-1.668
Work resources				
Low	1.00		1.00	
High	.700	.351-1.395	.337	.148-.768*
Coping styles				
Emotional-relational coping				
Low	1.00		1.00	
High	.520	.238-1.137	.957	.512-1.790
Objective coping				
Low	1.00		1.00	
High	.857	.451-1.630	1.184	.631-2.222
Personality				
Type A behavior				
Low	1.00		1.00	
High	2.156	1.095-4.247*	.319	.139-.731*
Negative affectivity				
Low	1.00		1.00	
High	1.188	.593-2.378	1.357	.704-2.615
Social inhibition				
Low	1.00		1.00	
High	1.291	.658-2.534	1.621	.831-3.163
Appraisals				
Perceived job satisfaction				
Low	1.00		1.00	
High	.793	.379-1.660	.974	.483-1.962
Perceived job stress				
Low	1.00		1.00	
High	1.221	.636-2.345	1.149	.622-2.122
Cultural dimensions				
Perceived racial discrimination				
Low			1.00	
High	n.s.	n.s.	1.217	.609-2.430
Affirmation/Maintenance culture				
Low			1.00	
High	n.s.	n.s.	1.092	.584-2.042
Search Identity/Adoption of the host culture				
Low			1.00	
High	n.s.	n.s.	.227	.097-.533*

Finally data reported in table 7.29 showed that the group of Ghanaian workers who perceived

high levels of resources and who favored Type A behavior and a search identity/adoption of

the host culture were less likely to suffer poor health. For this ethnic group Type A characteristics reduce the risk of reporting physical problems while for Italian workers the likelihood of the risk is higher. Moreover Ethnicity seems to influence the direction of this Type A that the literature commonly associates with cardiovascular diseases or other health problems. Some aspects changed on the basis of genetic and cultural dimensions and these data give us a cue to look in more detail at this specific aspect of Type A personality in the stress model. Finally among Italian workers, high work demands were associated with the risk of reporting poorer health conditions.

7.17 Summary tables

Ghanaian masons			
Perceived job satisfaction	**Anxious-depressive disorders**	**Relational disorders**	**General health**
-Work demands -Search Identity/Adoption of the host culture	-Objective coping -Racial discrimination	-Work demands -Negative Affectivity -Search Identity/Adoption of the host culture	-Work resources -Type A behavior -Search Identity/Adoption of the host culture

Italian masons		
Anxious-depressive disorders	**Relational disorders**	**General health**
- Rewards -Emotional coping -Negative affectivity	-Work demands - Rewards -Type A behavior -Perceived job stress	-Work demands -Type A behavior

7.18 Total Summary and discussion

Findings give an indication of the risk of reporting occupational stress, psychological disorders and physical problems in the migrant and Italian workers and confirmed the experimental hypotheses based on the literature and on the proposed model.

The results relevant to the two hypotheses of each study can be summarized as follows:

Hypothesis one:

- Among Eastern European workers the likelihood of reporting Anxious-Depressive disorders, Relational disorders, poor general health, job stress and job dissatisfaction increased as a function of level of exposure to negative occupational-cultural factor. This is in accordance with studies that reported that many care workers are at risk of experiencing clinical depression and anxiety (Gallant et al., 1997; Dura et al., 1991; Molyneux et al., 2008; Gruetzener, 2000). These findings showed that for Eastern European care workers the likelihood of suffering Anxious-Depressive disorders was higher than the other two health conditions while the likelihood of suffering Relational disorders was higher than the other two health conditions for the moderate group.

  Moreover the negative influence of job characteristics on psychophysical health conditions would be greatest adding perceived job satisfaction/stress in combination with individual characteristics and ethnicity dimensions, in particular comparing with the results above the odds ratios decrease for Anxious-Depressive disorders, Relational disorders. Findings on the associations of each factor with health outcomes seem to confirm the impact of appraisals on the total score.

- Among Moroccan workers the effects associated with exposure to negative occupational-cultural factor on Anxious-Depressive disorders, Relational disorders and poor general health were linear. For Moroccan factory workers the likelihood of suffering Relational disorders was higher than the other two health conditions. This data confirms the psychological problems related to relationships at work reported in most of studies among factory workers (Choi et al., 2001; Inoue et al., 2009; Seedat, 2009). Analyses on perceived job satisfaction/stress were not significant.

Furthermore including perceived job satisfaction/stress in the negative occupational-cultural factor in comparison with the results above the odds ratios increase at the 3rd tertile in particular for poor general health.

- Among Ghanaian workers the likelihood of reporting Anxious-Depressive disorders, Relational disorders and poor general health increased as a function of level of exposure to negative occupational-cultural factor. Results showed that for Ghanaian masons the risk of suffering Relational disorders was higher than the other two health conditions. This aspect was interesting considering the literature on stress in construction that suggests that most studies focus on injuries physical disorders. It seems that among this ethnic group psychosocial factors are more strongly related to psychological disorders than poor health conditions. Findings on perceived job satisfaction/stress were not significant.

  Finally the findings related to negative occupational-cultural factor with the inclusion of perceived job satisfaction/stress were similar to the previous ones and suggest a non-significant influence of perceived job satisfaction/stress in the Total score.

Hypothesis two:

The influence of the individual differences, job characteristics and cultural dimensions on health outcomes and perceived job satisfaction/stress in each ethnic group and the Italian workers are summarized as follows:

Among Eastern European workers; work demands, emotional coping and Type A behaviours were associated with lower perception of job satisfaction while the perception of rewards, objective coping strategy and an affirmation/maintenance culture increases the likelihood of

perceiving job satisfaction.

Moreover a search identity/adoption of the host culture was associated with higher risk of perceived job stress while the perception of rewards reduces the likelihood of perceiving job stress.

In the prediction of the psychophysical health outcomes, the Eastern European care workers with perception of high work demands (in accordance with McNeely, 2005; French et. al, 2000; Gruetzener, 2001) and with high recourse to Type A behaviors and negative affectivity were more likely to report anxious-depressive disorders and those who perceived high levels of job satisfaction were less likely to suffer anxious-depressive disorders (as reported in Karasek, 1992; Ramirez et al., 1996).

Considering the risk of suffering relational disorders, the group of Eastern European workers who perceived high levels of work demands and who favored Type A behaviors were more likely to suffer relational disorders while those with high recourse to emotional coping were less likely to suffer this psychological disorders. Also with respect to this psychological outcome the association between perceived job satisfaction and lower likelihood to report relational disorders was reported.

Finally with respect to general health, the Eastern European women who perceived high levels of work demands (in accordance with Andersen et al., 2011; Holtermann et al., 2010; Waters et al., 2006; Skotte el al., 2002) and who favored Type A behaviors were more likely to suffer poor health, while those with high recourse to objective coping and affirmation/maintenance culture behaviors were less likely to report poorer general health conditions.

Data confirmed the findings reported in literature on the independent effects of Type A and negative affectivity behaviors on somatic and psychological symptoms (Watson and Clark, 1984; Brief et al., 1988; Parkes, 1990; Specter, 1994; Terry et al., 1993). However the

influence of ethnicity on this job type in predicting health outcomes in our sample reflect the findings reported by Connel et al., 2001; Calderon and Tennstedt, 1998; Farran et al., 1997; Harrwood et al., 1998; Cox, 1995; Alten, 1993.

Furthermore non-significant interaction effects were found.

According to the literature on the stress models (by JDC, ERI and DRIVE models) our findings suggested that work demands, and coping strategies are particularly important for this kind of workers; Type A behavior, and negative affectivity are relevant in relationships to somatic and psychological symptoms and an affirmation/maintenance culture i.e. interest in engaging with their ethnic culture represents a typical behavior of this ethnic group and could be a helpful strategy for reducing the risk of physical problems.

Among Moroccan workers, emotional coping, a search identity/adoption of the host culture and perceived racial discrimination were associated with lower perception of job satisfaction while the perception of work resources increases the likelihood to perceive job satisfaction.

Furthermore a search identity/adoption of the host culture was associated with higher risk of perceived job stress while the perception of work resources reduces the likelihood to perceive job stress.

In the prediction of the psychophysical health outcomes, Moroccan workers with high perception of rewards were less likely to suffer anxious-depressive disorders as were the group of Italian workers, while those who favored negative affectivity behaviors were more likely to report this psychological outcome. Results on the impact of rewards were in accordance with the studies conducted by Kurz (2002); London et al., (2002); Milkie et al., (2004); Li et al., (2007); Jamal, (1999); Inoue et al., (2009).

Moreover it is interesting that social inhibition decreases the likelihood of reporting psychological disorders and these results suggest that considering the association with the

protective role of affirmation/maintenance culture strategy may be useful in understanding in more detail whether these cultural and behavioral patterns might be defensive strategies for dealing with psychological problems. Ethnicity seems influence the relationships between social inhibition and this psychological outcome.

Among Italians workers, the associations between high work demands and the risk of reporting anxious-depressive disorders (as reported in Inoue et al., 2009) and between high perception of job satisfaction and low likelihood of suffering this psychological disorder were significant (according to Jamal, 1999).

With respect to the risk of suffering relational disorders, the group of migrant workers who perceived high levels of rewards were less likely to suffer relational disorders as were those with high recourse to Type A behavior. In this case Type A behavior seems to be helpful in reducing the risk of reporting relational disorders and it could be considered as an unexpected signal of integration because of the competitive aspects related to this behavioral pattern.

Moreover in accordance with the literature, Moroccan workers with high recourse to a search identity/adoption of the host culture strategy and who had experienced racial discrimination were more likely to report relational disorders.

Among Italians workers, those who perceived high levels of work demands and who favored negative affectivity behaviors were more likely to report relational disorders and Italian factory workers with high perception of work resources were less likely to suffer this psychological disorder.

Finally with respect to general health, the group of Moroccan workers who perceived high levels of rewards, job satisfaction and who favored emotional/relational coping were less likely to suffer poor health. Furthermore perceived work stress was associated with the risk of reporting poorer general health for both groups and for Moroccan workers the likelihood of suffering this disorder was higher than that for the Italians.

Furthermore the Italians workers who favored Type A behaviors were more likely to report poor health conditions in accordance with the literature on Type A and physical diseases (Ganster, Schaubroeck, Sime and Mayes, 1991; Rosenmann, 1991).

In summary, the hypotheses of the proposed model applied to Moroccan workers were partially supported.

According to the literature on the stress models (by JDC, ERI and DRIVE models) our findings suggested that rewards, and coping strategies are particularly important for this kind of workers; Type A behavior, negative affectivity and social inhibition are relevant in relationships to health outcomes but in particular Type A behavior and social inhibition are in an unexpected direction. Moreover in terms of appraisals, job satisfaction/stress is particularly associated with physical problems. Considering the ethnicity dimensions this ethnic group that has many rules with respect to tradition and religion had many difficulties in adopting the host culture and for this reason it was associated with relational disorders. Results on perceived discrimination were in accordance with the literature on this subject (Klonoff et al., 1999; Troxel et al., 2003; Roberts et al., 2004; Smith et al. 2005).

Looking in more detail at the differences and similarities between the two groups of workers varying in ethnicity in the prediction of anxious-depressive disorders, Moroccan workers showed high perception of rewards as did the group of Italian workers, while Italians workers reported work demands as a significant factor associated with high risk of anxious-depressive disorders and job satisfaction related to low likelihood of suffering this psychological disorder. Two aspects of type D personality were salient in the prediction of anxiety and depression only among the migrant group and this could be related to cultural differences.

Moreover in the prediction of relational disorders, work demands was confirmed as an important factor among the Italians and they seemed to perceive the necessity of support (work resources) more than the group of Moroccans. At the same time they showed negative

affectivity as main personality aspect related to relational disorders. Moreover among the Moroccans it seemed that the cultural dimensions of racial discrimination and acculturation strategy of adoption of the host culture mostly influenced the relational aspects in the workplace.

Finally for general health, among the Italians type A personality seemed to influence the physical problems in accordance with the studies on Type A and physical diseases and for both groups perceived job stress were related to the risk of poorer general health. Moreover also for this health outcome among the Moroccans, the rewards factor seemed to be notable as well as the perception of job satisfaction and it is interesting that the strategy of coping related to the emotional aspects of behavior appeared important to dealing with physical problems.

Among Ghanaian workers; work demands were associated with lower perception of job satisfaction while a search identity/adoption of the host culture increases the likelihood of perceiving job satisfaction.

There were no significant associations with perceived job stress.

In the prediction of psychophysical health conditions, the group of Ghanaian workers with high recourse to objective coping were less likely to suffer anxious-depressive disorders and those who had experienced racial discrimination were more likely to report this psychological outcome. Moreover, the Italian group with high perception of rewards and with high recourse to emotional coping were less likely to report this psychological outcome in contrast with those who favored negative affectivity. The two groups adopt different coping strategies to deal with stressful situations.

Considering the risk of suffering relational disorders, the group of Ghanaian workers who perceived high levels of work demands were more likely to suffer relational disorders as were

the Italian masons but for migrants the likelihood of reporting this psychological outcome was a slightly greater. Moreover Ghanaian workers who favored negative affectivity behaviors were more likely to suffer relational disorders and those with high recourse to a search identity/adoption host culture were less likely to report this psychological outcome.

Among Italians Type A behavior and perceived work stress were significantly associated with the risk of suffering this psychological outcome while perception of high rewards was significantly associated with low risk of suffering relational disorders.

Finally with respect to general health, the group of Ghanaian workers who perceived high levels of resources and who favored Type A behavior and a search identity/adoption of the host culture were less likely to suffer poor health. For this ethnic group Type A characteristics reduce the risk of reporting physical problems while for Italian workers the likelihood of the risk is higher. Therefore Ethnicity seems to influence the direction of this Type A variable that the literature commonly associates with cardiovascular diseases or other health problems. Some aspects changed on the basis of genetic and cultural dimensions and this data give us a cue to look in more detail at this specific aspect of Type A personality in the stress model. Finally among Italian workers, high work demands were associated with the risk of reporting poorer health conditions. These results on physical health conditions show interesting differences between Ghanaians and Italians. In fact the presence of high work demands related to physical problems in the Italian masons were in accordance with most studies reported in the previous literature review (section 7.13.1) in contrast with the results on the Ghanaians that showed more relevant impact of work demands on relational disorders. Giving closer attention to the differences and similarities between the two groups of workers, in the prediction of anxious-depressive disorders Ghanaian workers showed high perception of work demands while Italians workers reported high perception of rewards as significant factors associated with lower risk of reporting these psychological disorders. It is interesting

that in terms of coping styles Ghanaians recur to logic strategy and Italians to emotional strategies and these aspects could be linked to different cultures. Moreover Italians reported the Type D personality characteristic of negative affectivity related to this psychological outcome but there were no salient personality characteristics shown by Ghanaians.

In the prediction of relational disorders, work demands seemed to be notable for both groups and in particular for the Ghanaians. Furthermore rewards appeared relevant among the Italian group and interesting differences between the two groups on personality were shown. In fact Ghanaians favored aspects related to type D while Italians favored type A behavioural characteristics. Italians also reported higher perception of job stress than Ghanaians and the cultural dimensions of adoption of the host culture and the strategy of objective coping appeared helpful for this ethnic minority to deal with this kind of psychological disorder.

Finally with respect to general health, among both groups type A personality seemed to influence the presence of physical problems but in different directions (as reported above) suggesting a strong influence of ethnicity. Furthermore the different job characteristics were interesting because the Italian perceived significant high levels of work demands while the migrants perceived significant high levels of work resources. Also in the prediction of physical problems the acculturation strategy of adoption of the host culture was salient for the migrant group and seemed to be protective.

7.19 Link to chapter 8

The hypotheses of the model applied to the individual groups were partially supported and the specific profiles of each ethnic group were reported. Therefore the application of the proposed model in each ethnic group presents important issues that are discussed in the next chapter which summarises all the results in reference to the proposed model. Moreover a

meta-analysis of the individual groups to look in more detail at the differences and similarities and the influence of ethnicity and types of job is presented. In particular it focused on the differences between the same types of workers varying in ethnicity in order to determine whether the main effects are influenced by ethnicity or types of job and it introduces the limitations of the study and the suggested areas for further research.

Chapter 8: Ethnicity and Work related stress: Meta-analysis of data

8.1 Introduction

This chapter will be a summary of all the results in reference to the proposed model and in particular it will show a meta-analysis of the individual groups to evaluate the influence of ethnicity (in terms of nationality) and types of job in the associations between work characteristics, coping styles, personality behaviours, appraisals, cultural dimensions and psychophysical health outcomes. We paid close attention to the individual groups with more relevant risk factors and to the differences between the same types of workers varying in ethnicity in order to determine whether the main effects are influenced by ethnicity or job type.

The methodology involved the comparison of five groups' effect sizes (odds ratios, 95% C.I.) using Comprehensive meta-analysis software. The figures show the significant and non-significant odds ratios and relative 95% C.I. for each group to describe the different profiles and to get a map of the associations.

This summary focuses on the main effects, the presence of different profiles, and comparing the same type of workers varying in ethnicity the relevant influence of job type and a little influence of ethnicity (as nationality) over the relationships between the independent variables and the psychophysical outcomes. Moreover in accordance with the previous chapters the significant associations between ethnicity (as nationality), cultural dimensions (as acculturation strategies, ethnic identity and perceived racial discrimination at work) and psychophysical outcomes in each ethnic group are underlined.

Finally the significant differences between the groups varying in job type and ethnicity are reported taking into account the difficulties in determining the influencing factors (gender, job type or ethnicity).

8.2 A brief summary of Ethnicity and work related stress data

This section will summarized the main effects found in the overall sample and in each individual group before showing in more detail the significant differences (section 8.4). Few factors that were not significant in the overall sample have significant values in the individual groups (and vice versa) and this depends on the number of cases in each group and on the variables included in the logistic regressions that influence the odds ratios.

Tables 8.1and 8.2 below show the main significant effects found in the whole sample and in the individual groups (migrants) for perceived job satisfaction/stress. Data on perceived job satisfaction/stress were excluded for the Italian workers (as reported in chapter 7) because there were very few significant associations of all the factors with these appraisals.

Table 8.1: Overall and individual group effects on perceived job satisfaction

Perceived job satisfaction			
Whole sample	**Eastern European care workers**	**Moroccan factory workers**	**Ghanaian masons**
-Work demands -Emotional coping -Objective coping -Type A behaviour -Search Identity/Adoption of the host culture -Racial discrimination	-Work demands -Rewards -Emotional coping -Objective coping -Type A behavior -Affirmation/Maintenance culture	-Work resources -Emotional coping -Search Identity/Adoption of the host culture -Racial discrimination	-Work demands -Search Identity/Adoption of the host culture

In the prediction of perceived job satisfaction (table 8.1 above) for the sample as a whole, work demands, emotional coping, Type A behaviours and racial discrimination were associated with lower likelihood of perceiving job satisfaction, while objective coping and a

search identity/adoption of the host culture were associated with higher likelihood of perceiving job satisfaction.

Findings for the individual migrant groups showed that the group of Eastern European workers who perceived high levels of work demands, who favoured emotional coping and Type A behaviours were less likely to perceive job satisfaction. Moreover those with high perception of rewards, with high recourse to objective coping and an affirmation/maintenance culture were more likely to perceive job satisfaction.

As regards the Moroccan workers, those with high recourse to emotional coping, a search identity/adoption of the host culture and who had experienced racial discrimination were less likely to perceive job satisfaction. Moreover those with high perception of work resources were more likely to perceive job satisfaction.

Finally the group of Ghanaian workers with high perception of work demands were less likely to perceive job satisfaction while those who favoured a search identity/adoption of the host culture were more likely to perceive job satisfaction.

Table 8.2: Overall and individual group effects on perceived job stress

Perceived job stress			
Whole sample	**Eastern European care workers**	**Moroccan factory workers**	**Ghanaian masons**
-Work demands -Objective coping -Type A behaviour -Affirmation/Maintenance culture	- Rewards -Search Identity/Adoption of the host culture	-Work resources -Search Identity/Adoption of the host culture	

In the prediction of perceived job stress (table 8.2 above) for the sample as a whole, work demands, Type A behaviours and an affirmation/maintenance culture were associated with higher risk of perceiving job stress, while objective coping was associated with lower risk of perceiving job stress.

Findings from the individual migrant groups showed that the group of Eastern European

workers with high perception of rewards were less likely to perceive job stress while those who favoured a search identity/adoption of the host culture were more likely to perceive job stress.

As regards the Moroccan workers, those with high perception of work resources were less likely to perceive job stress while those who favoured a search identity/adoption of the host culture were more likely to perceive job stress.

Moreover Table 8.3, 8.4, 8.5 below show the main significant effects found in the whole sample and in the individual groups for each health outcome.

Table 8.3: Overall and individual group effects on Anxious-depressive disorders

Anxious-depressive disorders					
Whole sample	**Eastern European care workers**	**Moroccan factory workers**	**Italian factory workers**	**Ghanaian masons**	**Italian masons**
-Work demands -Objective coping -Type A behavior -Social inhibition -Perceived job stress -Affirmation/Maintenance culture - Racial discrimination	-Work demands -Type A behavior - Negative affectivity - Job satisfaction	- Rewards -Negative Affectivity -Social inhibition	-Work demands - Rewards - Job satisfaction	-Objective coping -Racial discrimination	- Rewards -Emotional coping -Negative affectivity

In the prediction of anxious-depressive disorders (table 8.3 above) for the sample as a whole, work demands and work stress, the personality behavioural patterns of social inhibition and Type A and racial discrimination were associated with higher risk of anxiety and depression, while objective coping and an affirmation/maintenance culture seem to reduce this risk.

Findings for the individual groups showed that the Eastern European care workers with perception of high work demands and with high recourse to Type A behaviors and negative affectivity were more likely to report anxious-depressive disorders and those who perceived high levels of job satisfaction were less likely to suffer anxious-depressive disorders.

As regards the Moroccan and Italian factory workers, Moroccan workers with high perception of rewards were less likely to suffer anxious-depressive disorders as were the

group of Italian workers, while those who favored negative affectivity behaviors were more likely to report this psychological outcome. Furthermore social inhibition decreases the likelihood of reporting psychological disorders.

Among Italians factory workers, the associations between high work demands and the risk of reporting anxious-depressive disorders and between high perception of job satisfaction and low likelihood of suffering this psychological disorders were shown.

Finally the group of Ghanaian workers with high recourse to objective coping were less likely to suffer anxious-depressive disorders and those who had experienced racial discrimination were more likely to report this psychological outcome. Moreover, the Italian masons group with high perception of rewards and with high recourse to emotional coping were less likely to report this psychological outcome in contrast to those who favored negative affectivity.

Table 8.4: Overall and individual group effects on Relational disorders

Relational disorders					
Whole sample	**Eastern European care workers**	**Moroccan factory workers**	**Italian factory workers**	**Ghanaian masons**	**Italian masons**
-Work demands -Rewards -Objective coping -Job satisfaction -Racial discrimination	-Work demands -Emotional coping -Type A behavior - Job satisfaction	- Rewards -Type A behavior -Search Identity/Adoption of the host culture -Racial discrimination	-Work demands -Work resources - Negative Affectivity	-Work demands -Negative Affectivity -Search Identity/Adoption of the host culture	-Work demands - Rewards -Type A behavior -Perceived job stress

In addition table 8.4 above shows that for the whole sample high levels of work demands and racial discrimination were associated with higher risk of reporting relational disorders, while rewards, the objective coping strategy, the cultural dimensions of a search identity/adoption of the host culture and perceived job satisfaction appear to be associated with a lower risk of this psychological outcome.

Considering the individual groups, the group of Eastern European workers who perceived high levels of work demands and who favored Type A were more likely to suffer relational disorders while those with high recourse to emotional coping were less likely to suffer this psychological disorder. Also with respect to this psychological outcome the association between perceived job satisfaction and lower likelihood of reporting relational disorders was shown.

Moreover the group of Moroccan workers who perceived high levels of rewards were less likely to suffer relational disorders as were those with high recourse to Type A behavior while Moroccan workers with high recourse to a search identity/adoption of the host culture strategy and who had experienced racial discrimination were more likely to report this psychological disorder.

Among Italians factory workers, those who perceived high levels of work demands and who favored negative affectivity behaviors were more likely to report relational disorders and those with high perception of work resources were less likely to suffer this psychological disorder.

In addition, the group of Ghanaian workers who perceived high levels of work demands were more likely to suffer relational disorders as were the Italian masons but for migrants the likelihood of reporting this psychological outcome was a little greater. Ghanaian workers who favored negative affectivity behaviors were more likely to suffer relational disorders and those with high recourse to a search identity/adoption host culture were less likely to report this psychological outcome.

Among Italian masons, Type A behavior and perceived work stress were significantly associated with the risk of suffering this psychological outcome while reward was significantly associated with low risk of suffering relational disorders.

Table 8.5: Overall and individual group effects on General health

General health					
Whole sample	**Eastern European care workers**	**Moroccan factory workers**	**Italian factory workers**	**Ghanaian masons**	**Italian masons**
-Work demands - Rewards -Objective coping -Type A behavior - Affirmation culture	-Work demands -Objective coping -Type A behavior -Affirmation culture	- Rewards -Emotional coping -Job satisfaction -Perceived job stress	-Type A behavior -Perceived job stress	-Work resources -Type A behavior -Search Identity/Adoption of the host culture	-Work demands -Type A behavior

Finally with respect to general health for the sample as whole (table 8.5 above), high perception of work demands and high recourse to Type A behaviours were associated with poorer general health, while rewards, objective coping and an affirmation/maintenance culture seem to reduce the risk of reporting physical problems.

The Eastern European women who perceived high levels of work demands and who favored Type A behaviors were more likely to suffer poor health, while those with high recourse to objective coping and an affirmation/maintenance culture behavior were less likely to report poorer general health.

Furthermore considering the Italian and Moroccan factory workers, the group of Moroccan workers who perceived high levels of rewards, job satisfaction and who favored emotional/relational coping were less likely to suffer poor health. Moreover perceived work stress was associated for both groups with the risk of reporting poorer general health and for Moroccan workers the likelihood of suffering this disorder was higher than that for the Italians. The Italian workers who favored Type A behaviors were more likely to report poor health conditions.

Finally the group of Ghanaian workers who perceived high levels of resources and who favored Type A behavior and a search identity/adoption of the host culture were less likely to

suffer poor health. For this ethnic group Type A characteristics reduce the risk of reporting physical problems while for Italian workers the likelihood is higher. Among the Italian masons, high work demands were associated with the risk to report poorer health conditions. Therefore these results suggests to look in more detail at the differences and similarities between same kind of workers varying in ethnicity in order to understand how ethnicity or type of job environment have influence on psychophysical problems.

8.3 Description of Meta-analysis of data

The meta-analysis reported in appendix 8.1 considered the associations between work characteristics, coping styles, personality behaviours, appraisals, cultural dimensions (independent variables) and psychophysical health outcomes in all the individual groups. In terms of differences and similarities between the groups the presence of low levels of perceived job stress and job dissatisfaction for each ethnic group (in particular the Ghanaians) suggested excluding these dimensions from the meta-analysis.

Only the main effects are reported and the significance of few overall effects does not correspond to the logistic regressions for the whole sample (chapter 6) where the factors were run all together and the interaction variables were included. Conversely the overall effect sizes from the meta-analysis software are generated for each factor, therefore the direction of the overall effects sizes is the same and the meta-analysis completely matches the individual groups' analyses. The tables and the plots describe the five groups' effect sizes and the respective plots. In these graphs, the black squares represent the odds ratios for the individual groups and the horizontal lines their confidence intervals (symmetrical).

In particular we have focused on the individual groups with more salient risk factors and on the differences and similarities between the workers varying in ethnicity in order to determine whether the main effects are influenced by ethnicity or job type.

The next section reports the significant differences between the groups in the associations of work characteristics, individual differences, appraisals and cultural dimensions with psychophysical health disorders from the meta-analyses (see appendix 8.1).

8.4 Differences between the groups in the prediction of psychophysical health disorders

This section shows the relevant differences between the groups in the associations of work characteristics, individual differences, appraisals and cultural dimensions with psychophysical health disorders. In particular most of the associations between the independent variables and outcomes were similar for each ethnic group. Few differences between the same types of workers varying in ethnicity were found. Essentially, for most of these associations ethnicity seems to be independent and the influence of job type seems to be relevant.

Tables 8.6, 8.7, 8.8 below show the significant differences between the groups and their respective overall effects from the meta-analyses taking into account the C.I. between the groups that didn't overlap.

Table 8.6: Significant differences between the individual group effects on Anxious-depressive disorders

Anxious-Depressive disorders	
Overall effects	**Individual groups (OR)**
Work demands	Eastern Europeans (4.006) > Italian masons (1.120)
	Moroccan factory workers (1.140)
Rewards	Italian factory workers (0.128) < Eastern Europeans (0.920)
	Ghanaian masons (0.753)
Perceived racial discrimination	Moroccan factory workers (1.140)< Ghanaian masons (3.796)
Social inhibition	Moroccan factory workers (0.343) < Italian masons (1.265)
	Italian factory workers (1.318)
	Eastern Europeans (1.342)
	Ghanaian masons (1.277)

Table 8.6 above shows the significant overall and individual group effects on anxious-depressive disorders taking into account the relevant differences between the groups.

Looking in more detail at the individual groups we found significant differences between Eastern European care workers, the Italian masons and the Moroccan factory workers in the associations of work demands with anxious-depressive disorders. In particular, the group of Eastern Europeans with high perception of work demands were more likely to report anxiety and depressive symptoms than Italian masons and Moroccans. Moreover in the associations of rewards with anxious-depressive disorders relevant differences were reported between Italian factory workers, Eastern Europeans and Ghanaians (the group of Italian factory workers with high perception of rewards were less likely to report anxiety and depressive symptoms than Eastern Europeans and Ghanaians). In terms of cultural dimensions in the associations between racial discrimination and anxious-depressive disorders there were differences between Ghanaians and Moroccans. For these associations it is not clear if the differences depend on gender, job type or ethnicity.

Only in the relationships between social inhibition and this psychological outcome does ethnicity seem to have a relevant influence considering the same type of workers varying in nationality (Moroccan and Italian factory workers). In fact for Moroccans social inhibition is

associated with low likelihood of suffering anxiety and depression, while for Italians it is associated with high likelihood of reporting this psychological disorder.

Table 8.7: Significant differences between the individual group effects on Relational disorders

Relational disorders	
Overall effects	**Individual groups (OR)**
Work demands	Eastern Europeans (5.328) > Moroccan factory workers (1.061)
Type A behavior	Moroccan factory workers (0.437) < Italian masons (2.156)
	Eastern Europeans (2.747)
Search Identity/Adoption of the host culture	Ghanaians (0.483) < Moroccan factory workers (1.786)

Table 8.7 above shows the significant overall and individual group effects on relational disorders taking into account the relevant differences between the groups.

Data showed significant differences between Eastern European care workers and the Moroccan factory workers in the associations of work demands with relational disorders. Moreover in the associations of Type A behaviour with relational disorders the group of Moroccans who favoured Type A behaviours were less likely to report this psychological health condition than Italian masons and Eastern Europeans. In terms of cultural dimensions in the associations between search identity/adoption of the host culture and relational disorders there were differences between Ghanaians and Moroccans. For these associations it is not clear if the differences depend on gender, job type or ethnicity.

Table 8.8: Significant differences between the individual group effects on general health

General health	
Overall effects	**Individual groups (OR)**
Objective coping	Eastern Europeans (0.297) < Ghanaian masons (1.184)
Type A behavior	Ghanaian masons (0.319) < Italian masons (2.156)
	Moroccan factory workers (2.176)
	Eastern Europeans (3.141)
Search Identity/Adoption of the host culture	Ghanaian masons (0.227) < Eastern Europeans (1.373)
	Moroccan factory workers (1.251)

Table 8.8 above shows the significant overall and individual group effects on general health.

Looking in more detail at the individual groups we found significant differences between Eastern European care workers and Ghanaians masons in the associations of objective coping with general health.

In terms of cultural dimensions in the associations between search identity/adoption of the host culture and general health there were differences between Ghanaians, Eastern Europeans and Moroccans. For these associations it is not clear if the differences depend on gender, job type or ethnicity.

Particularly relevant is the association between Type A behavior and poor general health where ethnicity seems to have a notable influence comparing the effect sizes of Ghanaian and Italian masons (same type of workers varying in nationality). In fact for this ethnic group Type A characteristics reduce the risk of reporting physical problems while for Italian workers the risk is higher.

8.5 Summary of the Meta-analysis: differences and similarities for each dimension of the model

In this last section we summarize and give closer attention to the influence of job type and ethnicity in the main study taking into account each dimension. Before looking in more detail at these aspects it is important clarify to how the methodology used could have influenced the presence of many similarities in the the associations between independent variables and outcomes between the individual groups. The factor analysis reported in the chapter 3 could have influenced these data because the components extracted for the overall sample and for each ethnic group were correlated before deciding to use the factor extracted for the sample as whole for each individual group. In this case we have probably lost the specific cut off points (even some specific factors) for each group, reducing the number of potential

differences, but we achieved more coherence in terms of testing the model and its application and comparing the groups using the same factors.

After clarifying this, we can confirm that the associations of work characteristics, individual differences, appraisals and cultural dimensions with psychophysical health outcomes were basically different for the individual groups and may be partially influenced by ethnicity and mostly influenced by job type.

The results have confirmed the main effects, the presence of different profiles, the relevant influence of job type and a little influence of ethnicity (as nationality) over the relationships between the independent variables and the psychophysical health outcomes.

As reported in the previous chapters there were significant associations between ethnicity (as nationality), cultural dimensions (as acculturation strategies, ethnic identity and perceived racial discrimination at work) and psychophysical outcomes in each ethnic group.

Comparing the same type of workers varying in ethnicity, findings reveal that ethnicity has very little influence over the relationships between the independent variables and outcomes and job type has a relevant impact.

In particular in the associations between work characteristics and psychophysical outcomes; work demands, rewards and work resources were influenced by the job type (when C.I. overlap for same type of workers varying in ethnicity) and these associations were similar for each ethnic group (in accordance with Smith et al., 2005). Therefore ethnicity seems to be independent (these associations do not vary with ethnicity) and the influence of job type seems to be relevant.

Considering the associations between individual differences and psychophysical outcomes; coping styles adopted in the workplace were quite similar in each group and in particular the personality behaviours of Type A and social inhibition might be related to ethnicity in the prediction of these outcomes. Data on personality behaviours seemed to show huge

differences comparing specific individual groups and they suggested looking in more detail at the different culture and traditions that influence these behavioural patterns.

Furthermore in the associations between appraisals (job satisfaction/stress) and psychophysical outcomes; perceived job satisfaction and work stress were influenced by job type and they showed similar associations for the same type of workers varying in ethnicity.

Data on the relationships between cultural dimensions and psychophysical outcomes (considering that these specific dimensions were not considered for the Italian groups and perceived racial discrimination at work was not significant for the Eastern European care workers) suggested that specific acculturation strategies and ethnic identity behaviours take into account the different culture and traditions of each ethnic group and the difficulties that they have to deal with in their workplaces (results were reported in chapter 7).

Finally findings on the more salient main and interaction effects on the psychophysical outcomes are investigated in chapter 7 and data on differences and similarities between different types of workers varying in ethnicity need to be looked at in more detail reducing the number of confounding factors (demographics and other factors, occupational factors).

8.6 Conclusions and implication for further research

This section looks in more detail at the implications of results as relating to the proposed Ethnicity and work-related stress model and the limitations of the study.

By referring back to the model and the initial hypotheses reported in chapter 6, section 6.3.3 and the results sections above, it can be seen that strong support was found for all aspects of the relationships except for the hypothesis 3, which needs further investigation.

In particular considering the results on each ethnic group we can confirm that:

1) Work demands and work resources were significantly related to health outcomes.

2) Individual differences in the form of coping strategies and personality characteristics were significantly related to health outcomes.

3) Ethnicity dimensions in the form of acculturation strategies, ethnic identity and perceived discrimination were significantly related to outcomes.

4) Job characteristics, individual differences and ethnicity dimensions were significantly related to perceived job satisfaction and perceived job stress.

The few interaction effects in the overall sample were not confirmed in each ethnic group and this may be the result of the distribution of significant cases in the logistic regression analyses.

Furthermore considering the role of the appraisals in reference to results on the overall sample, the application of the model in each ethnic group seemed to suggest that perceived job satisfaction/stress might be relevant as independent variables combined with the psychosocial factors proposed by the model. The absence of significant associations between Negative total factor score and perceived job satisfaction/stress in the Moroccan and Ghanaian samples seemed to confirm this issue. Moreover giving more attention to the individual effects in each group, data confirm the role of perceived job satisfaction as an outcome and that perceived job stress is particularly associated with individual characteristics and work characteristics (Mark and Smith, 2008) in accordance with chapter 6.

Therefore the results and the model are a good representation of the relationships between the tested variables in the five sample populations and the addition of the ethnicity aspects integrates the aspects of job characteristics models such as the DCS, as well as aspects from the ERI model, and important developments from transactional stress models.

Finding empirical support for some aspects of the proposed model is an important step, because it provides a strong framework that illustrates how psychosocial and individual variables can interact and influence one another, as well as the central role played by

ethnicity and work characteristics in this process. It also provides a strong basis for the development of future work, and provides a characterisation of the stress process that is dynamic and may have comparable or better ecological validity than many existing stress frameworks.

Despite these positive aspects, there were some limitations related to different ethnic groups and different jobs.

Findings related to the whole sample could be ambiguous with respect to ethnicity variables and some individual differences. In accordance with the literature on Ethnicity, cultural dimensions cannot be considered only as a descriptor of the population studied and each aspect of ethnicity depends on the culture of belonging and might influence specific health conditions.

Moreover one general remark to be made when analysing the working conditions of migrant workers is the influence of the sector and occupation. This means that, to a certain extent, some of the disadvantageous conditions that migrant workers face may be explained by the sectors and occupations where they are employed and not only for the fact of being migrants. Therefore the importance of the background in terms of values and social conditions of the host country is also relevant to define the position taken by the migrants and how they can deal with their minorities status and favour to specific acculturation strategy.

Another limitation is related to the comparison between migrant and Italian workers with respect to occupational health problems. In fact migrants work more often than native workers in sectors, occupations and jobs where working conditions are more strenuous and more physically stressful and these different conditions can lead to specific psychophysical problems. Therefore it was important to show preliminary different profiles between migrant and Italian groups but further more detailed research on each ethnic group and relative control group is required to clarify this. Despite the fact that most of the hypotheses proposed

by the model are confirmed, it is possible that the Italian sample is unrepresentative with respect to the large migrant sample size. For this reason the presence of more significant data on the psychophysical health dimensions suggested excluding the results for each ethnic group on perceived job stress and job satisfaction from the comparisons between the groups.

Moreover in terms of similarities and differences the results suggested improving the control group samples to give more relevant comparisons, in particularly focusing on the same kinds of workers varying in ethnicity to evaluate the influence of job type and ethnicity in the prediction of occupational health conditions.

Furthermore there is a potential limitation as regards the interaction effects because there was not enough evidence to consider those found in this study in terms of mediating and moderating effects. However the total contribution of the interaction effects to the model was marginal and future research and applications of the model in each different ethnic group may shed more light on these indirect effects in the workplace by improving the methodology to test buffering or increasing effects.

Also interesting is the role of personality behavioral pattern that was in accordance with the literature reported in chapter 5 but the findings suggested more research on the potential associations between personality and acculturation strategies/ethnic identity especially with respect to Type D behavioural patterns is required. Indeed for each ethnic group social inhibition and negative affectivity could be associated with an affirmation/maintenance culture or a search identity/adoption of the host culture, potentially clarifying the different profiles of the ethnic minorities. Moreover gender, age, level of education and work-family conflicts were not taken into account because of its close relationship to job type making these confounded factors.

Finally these limitations represented a relevant starting point to carry out future research in this area integrating the methodology and focusing on the aspects that this study proposes to improve.

Chapter 9: Final summary of objectives and implications for further research

9.1 Objectives and further research

This chapter returns to the objectives set out at the beginning of this thesis to summarise the contribution and implications of the research presented and how future research may build upon the findings.

1) To identify the potential problems of conceptualising and measuring ethnicity and the literature on ethnicity and occupational mental health, occupational physical health and work stress.

Chapter 2 presents a literature review and evaluates recent articles investigating ethnicity in stress and wellbeing at work to identify the lack of development regarding all the aspects related to the cultural dimensions in this research area. The chapter highlights the issue of complexity in term of the definition of ethnicity and cultural dimensions and focuses on the limitations in the literature due, in particular the fact that most studies that consider ethnicity include it only as descriptor of the working population studied rather than by considering acculturation strategies, racial discrimination and ethnic identity. The key conclusion of this Chapter was the necessity to integrate all the aspects of ethnicity dimensions before investigating the associations between ethnicity and occupational health.

Despite the large number of studies considered in this chapter, the problems of conceptualising and measuring ethnicity in the work stress area could further investigating by also giving closer attention to comparative studies on the same kind of workers varying in ethnicity. Moreover it could be helpful carry out a meta-analysis of studies on this topic in order to have a more detailed map of the issues related to ethnicity in this research area.

2) To examine the ethnicity dimensions in the associations with occupational health.

Chapter 3 evaluates all the aspects of ethnicity such as acculturation strategies, perceived discrimination and cultural identity in the associations with occupational health and the results confirmed the importance of giving more attention to these dimensions. These preliminary analyses showed significant associations between cultural dimensions and occupational health and they suggest integrating all these variables in a general model (as we have reported in the following chapters) considering that cultural dimensions could also show significant associations with work characteristics and perceived job satisfaction/stress.

At the same time, further research on the specific influence of cultural dimensions in the prediction of health conditions and on the associations of these variables with other individual differences such as personality behaviour in a cross cultural perspective could be interesting.

3) To examine the relationships between ethnicity variables, work characteristics and job satisfaction/stress considering each aspect of ethnicity.

Chapter 4 confirmed the main effects of cultural dimensions on the dimensions related to occupational stress. Therefore these findings and the earlier ones suggested reflecting on the potential role of all the ethnicity aspects in the work related stress models as individual differences or potential sources of stress and not simply as descriptors. Moreover it may be interesting to investigate in more detail the interaction effects of cultural dimensions, work characteristics and perceived job stress on health outcomes in a general model. In particular perceived discrimination at work could be a cultural dimension associated with work demands in the prediction of negative health conditions. Therefore further research on the

interaction effects (not direct) may also be helpful to improving the methodology to test them.

4) To describe the major theoretical models of stress and work related stress in order to understand how Ethnicity should be considered in this specific area and to propose a model of stress that integrates Ethnicity and work related stress.

Chapter 5 highlights the important role played by individual differences in the stress process and the potential role of the ethnicity variables as individual differences or sources of stress. Considering the lack of models that integrate the aspects of traditional job stress models with all the ethnicity variables, this Chapter proposes testing a model of stress that integrates Ethnicity and work related aspects in a transactional perspective. In accordance with the debate on the individual differences in the stress model, the integration of the cultural dimensions could be helpful in understanding how the influence of ethnicity in the workplace could be relevant in terms of risk factors in the prediction of negative health. Moreover care is needed in ensuring that all the confounding factors are presented in a general model and in particular that the potential role of moderator or mediator of the cultural dimensions is considered. For this reason further research on the mediator and moderator factors could be important to study more complex associations between the factors involved in the transactional models of stress.

5) To describe a proposed of Ethnicity and work related stress model and to investigate the associations between individual differences, work characteristics, ethnicity dimensions, appraisals and health outcomes in a migrant working population in South Italy.

Chapter 6 proposed and tested a transactional model of ethnicity and work stress (taking a cue from the DRIVE model) which simultaneously compared a number of job characteristics, individual differences, ethnicity dimensions and appraisals in the prediction of psychophysical health conditions in migrant and Italian workers on the basis of the literature on stress models, the specific research on migrant workers and the results reported in the previous chapters. The results and the model are a good representation of the relationships between the tested variables and the addition of the ethnicity aspects integrates the aspects of job characteristics models such as the DCS, as well as aspects from the ERI model, and important developments from transactional stress models.

Finding empirical support for some aspects of the proposed model is an important step, because it provides a strong framework that illustrates how psychosocial and individual variables can interact and influence one another, as well as the central role played by ethnicity and work characteristics in this process.

Despite these positive aspects, some results related to the whole sample could be ambiguous with respect to ethnicity variables and some individual differences and each aspect of ethnicity can be relevant, depending on the ethnic group and influences specific health conditions.

One general remark to be made when analysing the working conditions of migrant workers is the influence of the sector and occupation. This means that, to a certain extent, some of the disadvantageous conditions that migrant workers face may be explained by the sectors and occupations where they are employed and not only for the fact of being migrants.

Furthermore another potential limitation regards the interaction effects because there was not deemed enough evidence to consider those found in this study in terms of mediating and moderating effects. However the total contribution of the interaction effects to the model was marginal.

Therefore further research and applications of the model in each ethnic group may give more attention to these not direct effects in workplace improving the methodology to test buffering or increasing effects. Moreover the role of personality behavioral pattern suggested potential associations between personality and acculturation strategies/ethnic identity especially with respect to Type D and Type A behavioural patterns.

Finally the role of job satisfaction in the general model is particularly interesting because this factor influences the psychophysical health conditions (as an independent variable) and at the same time is a relevant outcome in the associations with the individual differences and psychosocial job characteristics. As regards the perceived job stress factor, it is hypothesised to be the mechanism by which levels of workplace psychosocial factors can affect health outcomes. These two factors might be worth investigating in further research in the associations with all the dimensions involved in the model in order to understand better their influence in migrant workers before looking at their effects in the prediction of psychophysical health conditions.

6) To report the application of the proposed model in each ethnic group to show different profiles of associations,

7) To show a meta-analysis of the individual groups to focus on the differences and similarities between the individual groups,

8) To focus on the limitations of this project and further research.

The results from the three studies on each ethnic group and their relative control groups reported in Chapter 7 have partially confirmed the hypotheses predicted by the model and the presence of different profiles of associations in each ethnic group. Moreover with respect to the meta-analysis (Chapter 8) most of the associations between the independent variables and

outcomes were similar for each ethnic group. Few differences between the same types of workers varying in ethnicity were found. Basically for most of these associations ethnicity seems to be independent and the influence of job type seems to be significant.

The following limitations showed in this chapter suggested further research. In particular few interaction effects showed in the overall sample were not confirmed in each ethnic group and it could depend on the distribution of significant cases in the logistic regression analyses.

Another limitation regards the comparison between migrant and Italian workers with respect to occupational health problems. In fact migrants work more often than native workers in sectors, occupations and jobs where working conditions are more strenuous and more physically stressful and these different conditions can lead to specific psychophysical problems. Therefore it was important to show preliminary different profiles between migrant and Italian groups but it is possible that the Italian sample is therefore unrepresentative with respect to the large migrant sample size.

In terms of differences and similarities between the groups the presence of more significant data on the psychophysical health dimensions suggested excluding in these comparisons the results for each ethnic group on perceived job stress and job satisfaction.

These last three limitations suggest improving the individual sample sizes for further research and looking in more detail at the potential variables that could interact in each ethnic group.

Finally the presence of a large number of similarities suggests giving more attention to the factor analysis of the variables involved in the model and considering the risk of reducing the number of differences to have more coherent similar factors for each individual group.

9.2 Final summary

This study proposes different critical issues but at the same time the integration of the work related stress research with the cross cultural approach gives a contribution to improve psychological interventions promoting health in workplace taking into account the important influence of ethnicity aspects in the relationships within and with the work environment.

The complexity proposed by the model suggested selecting different factors and studying in deep the specific associations with health condition or job satisfaction and stress.

Therefore the difficulty to understand how ethnicity or type of job environment have influence on psychophysical problems remains a crucial issue that need to be more investigated in the multicultural society. For this reason further research that focuses on the association between culture and personality in the prediction of health will be considered as well as gender, age, level of education and work-family conflicts will be other interesting variables considering the potential role of confounding factors played in our study and due to the strictly associations with ethnicity and job type. These main issues confirm the importance to focus on the interaction effects in this suggested model.

References

Adams, J. S. (1965). Inequity in social exchange. In L. Berkowitz (Ed.), *Advances in experimental social psychology.* 267-299. New York: Academic Press.

Agustoni A. (2006), *Abitare e insediarsi*, in Fondazione Ismu, Undicesimo Rapporto sulle migrazioni, FrancoAngeli, Milano, 203-224.

Ahonen E.Q. et al. (2009). Invisible work, unseen hazards: the health of women immigrant household service workers in Spain. *American Journal of Industrial Medicine*, *53*:405–416.

Alemani, C. (2004). 'Le colf: ansie e desideri delle datrici di lavoro', *Polis 1*: 137–64.

Allochtonen (2002). *Sociaal-medische begeleiding en reïntegratie*, literatuurstudie, Tilburg, januari, uitgave: ZonMw.

Al-Issa, I. & Tousignant, M. (1997). *Ethnicity, Immigration and Psychopathology*. New York: Plenum Press.

Alten, G.J. (1993). *Racial variations in caregiver stress and burden among informal caregivers of impaired elderly persons*.University of Florida, Gainesville.

Amassari, S. and Black, R. (2001). Harnessing the Potential of Migration and Return to Promote Development: Applying concepts to West Africa', IOM Migration Research Series, 5, *International Organization for Migration*, Geneva.

Ames, G.M., Rebhun L.A. (1996). Women, alcohol and work: interactions of gender, ethnicity and occupational culture. *Social Science & Medicine*, *43*(11):1649-63.

Anton D, Rosecrance JC, Gerr F, Merlino LA, Cook TM. (2005). Effect of concrete block weight and wall height on electromyographic activity and heart rate of masons. *Ergonomics, 48*:1314–1330.

Aroian, K. J., & Norris, A. E. (2000). Resilience, stress, and depression among Russian immigrants to Israel. *Western Journal of Nursing Research.Special Issue: Transcultural and Cross-Cultural Nursing Research*, *22*(1): 54-67.

Aroian, K.J., Norris, A. E., Patsdaughter, C. A., Thanh V. T. (1998).Predicting Psychological Distress Among Former Soviet Immigrants, *International Journal of Social Psychiatry* , *44*(4): 284-294.

Baker, C.C. (1987). Ethnic differences in accident rates at work. *British Journal of Industrial Medicine. 44*(3):206-11.

Bakker, A.B., & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology, 22,* 309–328.

Bakker, A.B., Demerouti, E., De Boer, E. and Schaufeli, W.B. (2003b), "Job demands and job resources as predictors of absence duration and frequency", *Journal of Vocational Behavior. 62*:341-56.

Bakker, A.B., Demerouti, E. and Schaufeli, W.B. (2003a), "Dual processes at work in a call centre: an application of the Job Demands-Resources model", *European Journal of Work and Organizational Psychology*, *12*: 393-417.

Bakker, A.B., Hakanen, J.J., Demerouti, E., & Xanthopoulou, D. (2007). Job resources boost work engagement, particularly when job demands are high. *Journal of Educational Psychology*, *99*, 274–284.

Bakker, A.B., Van Veldhoven, M.J.P.M., & Xanthopoulou, D. (2010). Beyond the Demand-Control model: Thriving on high job demands and resources. *Journal of Personnel Psychology, 9,* 3–16.

Ballard, C.G., Saad,K., Patel, A., Gahir,M., Solis, M., et al. (1995). The prevalence and Phenomenology of psychotic symptoms in dementia sufferers. *International Journal of Geriatric Psychiatry*, *10*, 477-485.

Baron, R.M., & Kenny, D.A. (1986). The Mediator-Moderator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173-1182.

Barth, F. (1969). *Ethnic groups and Boundaries: The Social Organisation of Culture Difference*, London, UK: Allen and Unwin.

Bartley M, Sacker A, Clarke P. (2004). Employment conditions, employment status and limiting illness: prospective evidence from the British Household Panel Survey 1991-200. *Journal of Epidemiology & Community Health. 58*(6), 501-506.

Batnitzky, A., and McDowell, L. (2011). Migration, nursing,institutional discrimination and emotional/affective labour: ethnicity and labour stratification in the UK National Health Service. *Social and Cultural Geography*, *12*(2):181-201.

Baumeister, R.F. and Leary, M.R. (1995), "The need to belong: desire for interpersonal attachments as a fundamental human motivation", *Psychological Bulletin*, *117*: 497-529.

Bebbington, P. and Kuipers, L. (1994). The clinical utility of expressed emotion in schizophrenia. *Acta Psychiatrica Scandmavica*, 46 (Suppl. 382), 46–53.

Beiser, M. (1988). Influences of Time, Ethnicity and Attachment on Depression in Southeast Asian Refugees. *American Journal of Psychiatry 145:*46-51.

Benjamin, A. E., and Matthias, R. (2004). ''Work–Life Differences and Outcomes for Agency and Consumer-Directed Home-Care Workers.'' *Gerontologist 44* (4): 479–88.

Berry, J. W. 1997. Immigration, acculturation, and adaptation. *Applied Psychology 46*(1): 5-34.

Berry, J.W., Kim, U., Power, S.,Young, M.,&Bujaki, M. (1989). Acculturation studies in plural societies. *Applied Psychology: An International Review*, *38*, 135-186.

Bergeret, A., Pouget E., Tedone R., Meygret T., Cadot R., Descotes J. (1990). Neutrophil functions in lead-exposed workers. *Human & Experimental Toxicology. 9*(4):231-3.

Betancourt, H., Lopez, S. R. (1993). The study of culture, ethnicity and race in American Psychology, *American Psychologist*; *48*(6): 629-637.

Betemps, E.J., Buncher C.R.., Clark C.S. (1994). Proportional mortality analysis of wastewater treatment system workers by birthplace with comments on amyotrophic lateral sclerosis. *Journal of Occupational Medicine. 36*(1):31-5.

Bhugra, D., & Minas, I.H. (2007). Mental health and global movement of people. Lancet, *370*(9593), 1109–1111.

Black, R.1998 *Refigees, Environment, and Development.* Harlow, UK Longman

BLS (Bureau of Labor Statistics) (2007), *Women in the labor force: A databook.* Available at:http://www.bls.gov/cps/wlf-intro-2007.pdf.

Bluen, S. D., Barling, J. & Burns, W. (1990). Predicting sales performance, job satisfaction, and depression by using the achievement strivings and inpatience-irritability dimensions of Type A behavior. *Journal of Applied Psychology*, *75*, 212–216.

Bochhah, N. (2006): *Gediscrimineerd op de werkvloer, en dan...? [Discrimination on the work floor: and then what?], Landelijk Bureau ter bestrijding van Rassendiscriminatie* (LBR), Rotterdam.

Bortner , R. W. (1969) A short rating scale as a potential measure of Pattern A behaviour . *Journal of Chronic Diseases* , *22* , 87 - 91.

Bosma,H., Peter, R., Siegrist, J. and Marmot, M.(1998).Two alternative job stress models and the risk of coronary heart disease. *American Journal of Public Health*, *88*, 68–74.

Bradshaw, L.M., Fishwick D., Slater T., Pearce N. (1998). Chronic bronchitis, work related respiratory symptoms, and pulmonary function in welders in New Zealand. *Occupational & Environmental Medicine. 55*(3):150-4.

Breslau, J., Aguilar-Gaxiola, S., Borges, G., Castilla-Puentes, R.C., Kendler, K.S., Medina-Mora, M.E., Su, M.,& Kessler, R.C. (2007). Mental disorders among English-speaking Mexican immigrants to the US compared to a national sample of Mexicans. *Psychiatry Research*, *151*(1–2), 115–122.

Brief, A. P., Burke, M. J., George, J. M., Robinson, B. S., & Webster, J. (1988). Should negative affectivity remain an unmeasured variable in the study of job stress? *Joumal of Applied Psychology, 73*: 193-198.

Brief, A.P., & George, I.M. (1991). Psychological stress and the workplace: A brief comment on Lazarus' outlook. In P.L. Perrewe (Ed.), *Handbook on job stress. Journal of Social Behaviour and Personality*, *6*, 7, 15-20.

Briner, R.B., Harris, C., & Daniels, K. (2004). How do work stress and coping work?Toward a fundamental theoretical reappraisal. *British Journal of Guidance & Counselling, 32*(2): 223-234.

Budde, A., Child, J., Francis, A. and Kieser, A. (1981). *Corporate goals, managerial objectives and organisational structures in British and West German companies*, The University of Aston Management Centre Working Paper Series, No. 206.

Burger, J. M., & Cooper, H. M. (1979). The desirability of control. *Motivation and Emotion, 3*, 381-393.

Butterworth P, Leach L, Pirkis J, Kelaher M.(2012). Poor mental health influences risk and duration of unemployment: a prospective study. *Social Psychiatry and Psychiatric Epidemiology*. *47*(6):1013–1021.

Calderon, V., & Tennstedt, S. (1998). : Results of a qualitative study. Journal of Gerontological *Social Work*, *30,* 159-178.

Caplan, R.D., Cobb, S., French, J.R., Harrison, R.D. & Pinneau, S.R. (1975). *Job Demands and Worker Health: Main effects and occupational differences.* Washington: U.S. Government Printing Office.

Carayon, P., Smith, M.J., & Haims, M.C. (1999). Work Organization, Job Stress, and Work-Related Musculoskeletal Disorders. *Human Factors*, *41*, 4, 644.

Carfagna, M. (2002). '*I sommersi e i sanati. Le regolarizzazioni degli immigrati inItalia'*, in Asher Colombo and Giuseppe Sciortino (eds) Stranieri in Italia. Assimilati ed esclusi , Bologna: Il Mulino, pp. 53–87.

Caritas (2006). Immigrazione. Dossier Statistico 2006, Roma, Nuova Anterem

Chau, N., Gauchard, G.C., Siegfried, C., Benamghar, L., Dangelzer, J-L., Français, M., Jacquin, R., Sourdot, A., Perrin, P.P. & Mur, J.M. (2004), 'Relationships of job, age, and life conditions with the causes and severity of occupational injuries in construction workers', *International Archives of Occupational and Environmental Health*, **77** (1), 60-6

Chesney, M.A.Sevelius, G.Black, G.W.Ward, M.Swan, G.E.Rosenman, R.H. (1981).Work environment, type A behavior, and coronary heart disease risk factors. *J. Occup. Med.*, *23*:551–555.

Chia, S.E., Chia K.S., Ong C.N. (1991). Ethnic differences in blood lead concentration among workers in a battery manufacturing factory. *Annals of the Academy of Medicine*, Singapore. *20*(6):758-61.

Chia, S.E., Chia H.P., Ong C.N., Jeyaratnam J. (1996). Cumulative blood lead levels and nerve conduction parameters. *Occupational Medicine* (Oxford). *46*(1): 59-64.

Chibnall J, Tait R. (2001). Pain assessment in cognitively impaired and unimpaired older adults: a comparison of four scales. *Pain.92*:173–186.

Choi, S.K., Lee, M.H., Chung, G.H. (2001). Competition in Korean mobile telecommunications market: business strategy and regulatory environment. *Telecommunications Policy 25*, 125–138.

Classen T.J., Dunn R.A. (2012). The effect of job loss and unemployment duration on suicide risk in the United States: a new look using mass-layoffs and unemployment duration*, Health economics; 21*(3): 338-350.

Cohen, S., & Wills, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98***,** 310–357.

Cook TM, Rosecrance JC, Zimmerman C.L. (1996). *The University of Iow a construction survey*. NIOSH grants U02/CCU308771 and U02/CCU312014. Iowa City, IW: University of Iowa, Biomechanics and Ergonomics Facility.

Colombo, A. (2008). Il flusso legale di lavoratori dall'estero. in: M. Barbagli. *Primo rapporto sugli immigrati in Italia*. Roma, Ministero dell'Interno.

Comino EJ; Harris E; Silove D; Manicavasagar V; Harris M.F. (2000). 'Prevalence, detection and management of anxiety and depressive symptoms in unemployed patients attending general practitioners.', *Australian and New Zealand Journal of Psychiatry*, *34* (1): 107 – 113.

Connell, C., & Gibson, G. (1997). Racial ethnic and cultural differences in dementia caregiving: Review and analysis. *The Gerontologist*, *37*(3), 355-364.

Conrad, K., Levy Y., Blank M., Mehlhorn J., Frank K.H., Roch B., Shoenfeld Y. (1998). The pathogenic 16/6 idiotype in patients with silica associated systemic lupus erythematosus (SLE) and uranium miners with increased risk for development of SLE. *Journal of Rheumatology*. 25(4):660-6.

Coon S, Stark A, Peterson E, Gloi A, Kortsha G, Pounds J, Chettle D, Gorell J. (2006). Whole-body lifetime occupational lead exposure and risk of Parkinson's disease. *Environ Health Perspect.114*:1872–1876.

Cooper, C.L., Dewe, P.J., & O'Driscoll, M.P. (2001). *Organizational Stress: A Review and Critique of Theory, Research, and Applications*. Sage Publications.

Cooper , C. L. , Sloan , S. J. , & Williams, S. (1988) *Occupational stress indicator.* Windsor, UK : NFER Nelson.

Coppel, D.B., Burton, C., Becker, J. and Fiore, J. (1985) Relationships of cognitions associated with coping reactions to depression in spousal caregivers of Alzheimer's disease patients. *Cog. Ther. Res. 9*, 253-266.

Costa, J. A., Bamossy, G. J. (1995). Perspectives on ethnicity, nationalism and cultural identity, in *Marketing in a multi-cultural world - ethnicity, nationalism and cultural identity*, Costa, J. A. and Bamossy, G. J. (Eds): 3-25, Beverly Hills, USA: Sage.

Cox, T. (1978). *Stress.* London, Macmillan.

Cox, T. (1987). *Stress, coping and problem solving.* Work & Stress, *1*, 5-14.

Cox, C. (1995). Comparing the experience of Black and White Caregivers of dementia patients. *Social Work*, *3*, 343-349.

Cox, T., & Ferguson, E. (1991). Individual Differences, Stress and Coping. In C.L. Cooper, & R. Payne (Eds.). *Personality and Stress: Individual Differences in the Stress Process.* New York: Wiley.

Cox, T., Griffiths, A. (1995). The nature and measurement of work stress: theory and practice. In J.R. Wilson, & E.N. Corlett (Eds). *Evaluation of human work: a practical ergonomics methodology*, 783-803. Philadelphia: Taylor Francis.

Cox, T., Griffiths, A., Rial-Gonzales. E. (2000). *Research on Work- related Stress,* Office for Official Publications of the European Communities: Luxembourg.

Cox, T., & Mackay, C.J. (1981). A Transactional approach to occupational stress. In:E.N. Corlett & J. Richardson (Eds.) *Stress, Work Design and Productivity*. Chichester: Wiley & Sons.

CPWR - The Center for Construction Research and Training. (2008). *The Construction Chart Book: The U.S. Construction Industry and Its Workers, Fourth Edition*. Silver Spring, MD.

CSAO. (2002). *Injury atlas: Ontario construction.* Toronto, Ontario, Canada: Construction Safety Association of Ontario. The publication can be accessed at <http://www.csao.org/>.

Cubbin, C., LeClere F.B., Smith G.S. (2000). Socioeconomic status and the occurrence of fatal and nonfatal injury in the United States. *American Journal of Public Health*. 90(1):70-7.

Cutrona, C.E., & Russell, D.W. (1990). Type of social support and specific stress: Toward a theory of optimal matching. In B.R. Sarason, I.G. Sarason & G.R. Pierce (Eds.), *Social Support: An Interactional View* (pp. 319-366). New York: Wiley & Sons.

Cwikel, J., Abdelgani, A., Goldsmith, J. R., Quastel, M., & Yevelson, I. I. (1997). Two-year follow-up study of stress related disorders among immigrants to Israel from the Chernobyl area. *Environmental Health Perspectives*, *105*(Suppl. 6), 1545–1550.

Davies, S., Thornicroft, G., Leese, M. (1996). Ethnic differences in risk of compulsory psychiatric admission among representative cases of psychosis in London, *British Medical Journal*; *312*: 533-537.

DeCharms, R. (1968), Personal Causation, Lawrence Erlbaum Associates, Hillsdale, NJ

Deci, E.L. and Ryan, R.M. (1985). Intrinsic Motivation and Self-determination in Human Behavior, Plenum Press, New York, NY.

Degiuli, F. (2007). "A Job with No Boundaries: Home Eldercare Work in Italy."*European Journal of Women's Studies*. 14 (3): 193-207.

De Jonge, J., & Dormann, C. (2003). The DISC model: Demand-induced strain compensation mechanisms in job stress. In M. F. Dollard, H. R. Winefield, & A. H. Winefield (Eds.), *Occupational stress in the service professions,* 43-74. London: Taylor & Francis.

De Jonge, J., & Dormann, C. (2006). Stressors, resources, and strain at work: A longitudinal test of the triple-match principle. *Journal of Applied Psychology, 91,* 1359-1374.

De Jonge, J., Dormann, C., & Tooren van den, M. (2008). The Demand-Induced StrainCompensation Model: Renewed theoretical considerations and empirical evidence. In K. Näswall, J. Hellgren, & M. Sverke (Eds.), *The individual in the changing working life* (pp. 67-87). Oxford: Cambridge University Press.

Del Boca, D. & Venturini, A. (2003). *"Italian Migration*," IZA Discussion Papers 938 , Institute for the Study of Labor (IZA).

Demerouti, E., Bakker, A.B., Nachreiner, F., & Schaufeli, W.B. (2001). The job demands–resources model of burnout. *Journal of Applied Psychology, 86,* 499–512.

Denollet, J. (2005). "DS14: standard assessment of negative affectivity, social inhibition, and Type D personality". *Psychosomatic Medicine 67* (1): 89–97.

Denton, M., I. U. Zeytinoglu, K. Kusch, and S. Davies. (2007). ''Market Modeled Home Care: Impact on Job Satisfaction and Propensity to Leave.'' *Canadian Public Policy 33* (suppl): S81–99.

Derogatis, L. R. (1994). *Symptom Checklist 90–R: Administration, scoring, and procedures manual* (3rd ed.). (National Computer Systems). Minneapolis, MN.

Devereux, J.J., Vlachinikolis, I.G. & Buckle, P.W. (2002). Epidemiological study to investigate potential interaction between physical and psychosocial factors at work that may

increase the risk of symptoms of musculoskeletal disorder of the neck and upper limb. *Occupational and Environmental Medicine, 59*(4), 269-277.

Diamanti, I. (editor). (2001). Immigrazione e cittadinanza in Europa. Seconda indagine sugli atteggiamenti dei cittadini in otto Paesi Europei. *Appunti preliminari sui risultati*. Quaderni Fne, Collana osservatori, No. 3.

Dockerty, J.D., Marshall S., Fraser J., Pearce N. (1991). Stomach cancer in New Zealand: time trends, ethnic group differences and a cancer registry-based case-control study. *International Journal of Epidemiology. 20*(1):45-53, March.

Doyle, M. and Timonen, V. (2009). The Different Faces of Care Work: Understanding the Experiences of the Multi-Cultural Care Workforce, *Ageing & Society*, *29*: 337 – 350.

Dua, J. K. (1994). Job stressors and their effects on physical health, emotional health, and job satisfaction in a university, *Journal of Educational Administration*, *32*(1): 59-78.

Dunn, J., Fahy, T. A. (1990). Police admissions to a psychiatric hospital: Demographic and clinical differences between ethnic groups, *British Journal of Psychiatry*; *156*: 734-742.

Dura, J. R; Stukenberg, K.W;and Kiecolt-Glaser,JK.(1991).Anxiety and depressive disorders in adult children caring for demented parents. *Psychology and ageing.6,* 467-473.

Edwards, J., R.; Baglioni, A. J.; Cooper, C., L. (1991).Examining the relationships among self-report measures of the Type A behavior pattern: The effects of dimensionality, measurement error, and differences in underlying constructs: Correction. *Journal of Applied Psychology*, *76*(5), 657.

Elrick, T. & Lewandowska, E. (2008). Matching and Making Labour Demand and Supply: Agents in Polish Migrant Networks of Domestic Elderly Care in Germany and Italy', *Journal of Ethnic and Migration Studies. 34*(5): 717-734.

Entzel P, Albers J, Welch L. (2007). Best practices for preventing musculoskeletal disorders in masonry: Stakeholders perspectives. *Appl Ergon 38*:557–566.

Esler, M. and Kaye, D. (2000). Measurement of sympathetic nervous system activity in heart failure: the role of norepinephrine kinetics. *Heart Fail. Rev. 5*, 17-25.

Farran, C.J., Miller, B.H., Kaufman, J.E., & Davis, L. (1997). Race, finding meaning, and caregiver distress. *Journal of Aging and Health, 9,* 316-333.

Fernet, C., Guay, F., & Senécal, C. (2004). Adjusting to job demands: The role of work self-determination and job control in predicting burnout. *Journal of Vocational Behavior, 65*(1), 39-56.

Firth-Cozens J. (1997).Healthy promotion: changing behaviour towards evidence-based health care. *Quality in Health Care, 6*:205–11.

Flannigan, C. B., Glover, G. R., Feeney, S. T. (1994). Inner London collaborative audit of admissions in two health districts. 1: Introduction, methods and preliminary findings, *British Journal of Psychiatry*; *165:* 734-742.

Folkman, S. (1984). Personal control and stress and coping processes: A theoretical analysis. *Journal of Personality and Social Psychology*, *46*, 839-852.

Folkman, S. (2008). The case for positive emotions in the stress process. *Anxiety, Stress and Coping*, *21* (1), 3–14.

Folkman, S., & Lazarus, R.S. (1980). An Analysis of coping in a Middle-Aged Community sample. *Journal of Health and Social Behavior 21*, 219-239.

Folkman, S., Lazarus, R.S., Gruen, R.J., & DeLongis, A. (1986). Appraisal, Coping, Health Status, & Psychological Symptoms. *Journal of Personality and Social Psychology,* 50, 3, 571-579.

Fondazione ISMU (Iniziative e Studi sulla Multietnicita'). (2013). *XIX Rapporto sulle Migrazioni.*

Frankenhaeuser, M.Lundberg, U.Forsman, L. (1979). Dissociation between sympathetic-adrenal and pituitary-adrenal responses to an achievement situation characterized by high controllability: comparison between type A and type B males and females. *Biol. Psychol.*, 10: 79–91.

French, J.R.P., Jr. (1973). Person-role fit. *Occupational Mental Health*, 3, 15-20.

French, J.R.P., Jr, Caplan, R.D., & Harrison, R.V. (1982). *The mechanisms of job stress and strain*. London: Wiley.

Frese, M., & Zapf, D. (1999). On the Importance of the objective environment in stress and attribution theory. Counterpoint to Perrewe and Zellars. *Journal of Organizational Behavior*, 20, 761-765.

Frye, A. B. and D'Avanzo C. (1994), Themes in Managing Culturally Defined Illness in the Cambodian Refugee Family, *Journal of Community Health Nursing*. 11(2): 89-98.

Furnham, A., Shiekh, S. (1993). Gender, generational and social support correlates of mental health in Asian immigrants. *Int J Soc Psychiatry. 1993*; 39(1):22-33.

Fullerton, L., Olson L., Crandall C., Sklar D., Zumwalt R. (1995). Occupational injury mortality in New Mexico. *Annals of Emergency Medicine*. 26(4):447-54.

Gallant, M.P., & Connel, C.M. (1997). Predictors of decreased self-care among spouse caregivers of older adults with dementing illnesses. *Journal of Aging and Health*, 9, 373-395.

Ganster, D.C., Schaubroeck, J., Sime, W.E., & Mayes, B.T. (1991). The nomological validity of the Type A personality among employed adults. *Journal of Applied Psychology* [monograph], *76*, 143-168.

Geiger-Brown, J., C. Muntaner, K. McPhaul, J. Lipscomb, and A. Trinkoff. (2007).''Abuse and Violence during Home Care Work as Predictor of Worker Depression.'' *Home Health Care Services Quarterly 26* (1): 59–77.

Giga, S. & Hoel, H. (2006). Is it Racial Discrimination or Bullying? An Exploration into the Relationship between Racial Background and Experiences of Workplace Bullying. *Proceedings of the Fifth International Conference on Bullying and harassment in the Workplace*. June 15-17, Dublin, Ireland, 82-84.

Glass, D.C. (1972). *Behaviour Patterns, Stress, and Coronary Disease*. Lawrence Erlbaum, Hillsdale, N.J.

Gliber, M: *Migration and Health in France. In Country Reports on Migration and Health in Europe*. (2004). (eds. A Huismann, C Weilandt & A Geiger) Wissenschaftliches Institut der Ärzte Deutschlands e V, Bonn, pp. 106–155, cited in Carballo, Manuel, Divino, Jose Julio & Zeric, Damir, Migration and health in the European Union, Tropical Medicine &International Health *3* (12), 936-944.

Glucksmann, M. and Lyon, D.(2006). 'Configurations of Care Work: Paid and Unpaid Elder Care in Italy and the Netherlands', *Sociological Research Online 11*(2).
Goldberg, D. (1972). The detection of psychiatric illness by questionnaire: A technique for the identification and assessment of non-psychotic psychiatric illness. London, New York: Oxford University Press.

Gorsche RG, Wiley JP, Renger RF, Brant RF, Gemer TY, Sasynuik TM. (1999). Prevalence and incidence of carpal tunnel syndrome in a meat packing plant. *Occupational Environment Medicine. 56:* 417–22.

Greenberger, D. B. and Strasser, S. (1986). `Developing and application of a model of personal control in organizations', *Academy of Management Review*, *11*, 164±177.

Greenglass, E. and Burke, R.J. (2000a). The relationship between hospital restructuring, anger, hostility and psychosomatics in nurses. *Journal of Community and Applied Social Psychology, 10,* 155-161.

Grube J.W., et al. (1997). The relationship of drinking and hangovers to workplace problems: an empirical study. *Journal of Studies on Alcohol*. *58*(1): 37-47.

Gruetzner, H.M. (2001).*Anzheimer's: A Carigivers Guide and Sourcebook*.Wiley

Hackman, J.R., & Oldham, G.R. (1980). *Work Redesign*. Reading, MA: Addison-Wesley.

Hakanen, J.J., Bakker, A.B., & Demerouti, E. (2005). How dentists cope with their job demands and stay engaged: The moderating role of job resources. *European Journal of Oral Sciences*, *113*, 479–487.

Harrison, G., Holton, A., Neilson, D., Owens, D., Boot, D., Cooper, J. (1988). Severe mental disorder in Afro-Caribbean patients, *Psychological Medicine*; *18*: 643-657.

Harwood, D., Baker, W., Cantillon, M., Lowenstein, D., Ownby, R., & Duara, R. (1998). Depressive symptomatology in the first degree family caregivers of Alzheimer disease patients: A cross-ethnic comparison. *Alzheimer Disease and Associated Disorders*, *12*, 340-346.

Hattar- Pollara, M. & Meleis, A.I. (1995). The daily lived experiences of Jordanian immigrant women in the United States. *Western Journal of Nursing Research.17:* 521-538.

Haun, E & Vaglum, P. (1995).Organised violence and the stress of exile. Predictors of mental health in a community cohort of Vietnamese refugees three years after resettlement. British *Journal of Psychiatry*, 166, 360-367.

Hirschman, E. C. (1983). Cognitive Structure Across Consumer Ethnic Subcultures: A Comparative Analysis, *Advances in Consumer Research*; *10:* 197-202.

Hobfoll, S.E. (1989). Conservation of Resources. *American Psychologist*, *44, 3*, 513-524.

Hobfoll, S. E. (2002). Social and psychological resources and adaptation. *Review of General Psychology*, *6,* 307-324.

Hockey, G.R.J. (2000). Work environments and performance. In N. Chmiel (Ed.), *Introduction to Work and Organisational Psychology: A European Perspective* (pp. 206-230). Oxford: Blackwell Publishers.

Hodgkins, D.G., Hinkamp D.L., Robins T.G., Schork M.A., Krebs W.H. (1991). Influence of high past lead-in-air exposures on the lead-in-blood levels of lead-acid battery workers with continuing exposure. *Journal of Occupational Medicine*. *33*(7):797-803.

Hoel, H. & Cooper, C. (2000) Destructive Conflict and Bullying at Work. Manchester School of Management, University of Manchester Institute of Science and Technology (UMIST).

Holmstrom, E. (1992). *A study of the working movements and work postures of bricklayers when using traditional work methods and when working from a specially designed scaffold*. Bygghalsan Bulletin *7*(1):28–29.

Holtermann A, Jorgensen MB, Gram B, Christensen JR, Faber A, Overgaard K, et al. (2010).Worksite interventions for preventing physical deterioration among employees in job-groups with high physical work demands: background, design and conceptual model of FINALE. *BMC Public Health*, *10*:120.

House J. S. (1981). *Work stress and social support*. Reading, Mass: Addison-Wesley

Huang, S.L., & Spurgeon, A. (2006). The mental health of Chinese immigrants in Birmingham,UK. *Ethnicity & Health, 11*(4), 365–387.

Huang, Z.J., Wong, F.Y., Ronzio, C.R., & Yu, S.M. (2007). Depressive symptomatology and mental health help-seeking patterns of U.S. and foreign-born mothers. *Maternal and Child Health Journal*, *11*(3), 257–267.

Huxley, J., Haddon, A. C. (1935). We Europeans: A survey of racial problems, London: Jonathan Cape, cited from Singh, S. P. (1997) Ethnicity in psychiatric epidemiology: need for precision, *Journal of Psychiatry*; *171*: 305-308.

ILO. (2004). *Global strategy on occupational safety and health*. Geneva: International Labour Organization.

Inoue A, Kawakami N, Ishizaki M, et al. (2010).Organizational justice, psychological distress, and work engagement in Japanese workers. *Int Arch Occup Environ Health*; *83*: 29−38.

ISTAT (Italian National Institute of Statistics) (2007). *Rilevazione sulle Forze Lavoro*; at: www.istat.it/salastampa/comunicati/in_calendario/forzelav/20070 321_00.

ISTAT (2010). *La misura dell'economia sommersa secondo le statistiche ufficiali*. Anni 2000-2008. Statistiche in breve. Roma, ISTAT ISTAT (Italian National Institute of Statistics) (2014). *Stima rapida della popolazione*; at: demo.istat.it/stimarapida/

Israel, B.A., Schurman, S.J ., Hugentobler, M.K. & House, J.S. (1992). A participatory action research approach to reducing occupational stress in the United States. In: V. Di Martino (Ed.), *Preventing stress at work : conditions of work digest*, Vol. II (pp. 152 ±163). Geneva: International Labor Of® ce.Jamal, M. 1999. Job stress and employee well-being: a cross-cultural empirical study. *Stress Medicine, 15*: 153–158.

Israel,B.A., Schurman, S.J.& House, J.S.(1989).Action research on occupational stress: involving workers as researchers. *International Journal of Health Services*, *19*, 135 ±155.

Ivancevich, J.M. & Matteson, M.T. (1988). Type A behaviour and the healthy individual. *British Journal of Medical Psychology 61,* 37-56.

Jackson, S.A. & Loomis, D. (2002). 'Fatal occupational injuries in the North Carolina construction industry, 1978–1994', *Applied Occupational and Environmental Hygiene*, *17* (1), 27-33.

Jackson SE, Schuler RS. (1985).A meta-analysis and conceptual critique of research on role ambiguity and role conflict in work settings. *Organizational Behavior and Human Decision Processes. 36,* 16–78.

Janlert U and Hammarstrom A. (2009). Which theory is best? Explanatory models of the relationship between unemployment and health? *Biomed central Public Health, 9:* 235.

Jones, J. (1991). Psychological models of race: What have been and what should they be?, in: *Psychological Perspectives on Human Diversity in America*: 3-46, Washington D.C., USA: American Psychological Association.

Juuti, P. (2005). *Monikulttuurisuus voimavaraksi. Valtaväestö ja maahanmuuttajat työyhteisössä. [Multiculturalism as a resource. Natives and migrants at a workplace].* Kiljavan opisto ja JTO - tutkimuksia.

Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., & Rosenthal, R. A. (1964). *Occupational stress: Studies in role conflict and ambiguity*. New York: John Wiley.

Kakbi, M., Mazzucato, V. and Appiah, E. (2004) '''Wo beanane a eye bebree''. The economic impact of Netherlands-based Ghanaian migrants on rural Ashanti', *Population, Space and Place,10* (2): 85-98.

Kandola, R. and Fullerton, J. (1994), *Managing the Mosaic*, The Cromwell Press,Wiltshire.

Karasek, R. (1979). Job demands, job decision latitude and mental strain: Implications for job redesign. *Administrative Science Quarterly, 24:* 285-306.

Karasek, R. A. (1985). *Job Content Questionnaire and user's guide*. (University of Massachusetts, Lowell, MA).

Karasek, R., & Theorell, T. (1990). *Healthy work: Stress, productivity and the reconstruction of working life.* New York: Basic Books.

Karlsen, S., Nazroo, J. Y., McKenzie, K., Bhui, K. and Weich, S. (2005). Racism, psychosis and common mental disorder among ethnic minority groups in England. *Psychological Medicine*, *35*(12): 1795–1803.

Katz, D., and R. Kahn. (1966). *The Social Psychology of Organizations*. New York: Wiley.

Keinan, G. & Melamed, S. (1987). Personality characteristics and proneness to burnout: A study among internists. *Stress Medicine 3* (4) 307–315.

Keita, G. P. & Hurrell, J. J. (1994). Introduction. In G. P. Keita & J. J. Hurrell (Eds.), *Job stress in a changing workforce: Investigating gender, diversity, and family issues* (pp. xiii-xix). Washington, DC: American Psychological Association.Kerkhoven, N . (2000): *Arbeitsgerelateerde psychische problematiek bij allochtonen [Work relates psychological problems with foreigners]* in: Diversiteit en werkstress, FORUM.

Kim S, Rew L. (1994). Ethnic identity, role integration, quality of life, and depression in Korean-American women. *Archives of Psychiatric Nursing*; *8*(6):348–356.

King, M., Coker, E., Leavey, G., et al. (1994). Incidence of psychotic illness in London:comparisons of ethnic groups, *British Medical Journal*; *309*: 115-119.

Kirmayer, L. J. (2000). Epidemiology. In A. Kazdin (ed.), Encyclopedia of Psychology Vol. 3. Washington, DC: Oxford University Press (pp. 221-223).

Kleinman, A. (2004). "Culture and Depression." *New England Journal of Medicine 351*(10):951-953.

Kleinman, A., & Good, B. J. (1985). *Culture and Depression.* Berkeley, University of California Press.

Klonoff, E. A., Landrine, H., Ullman, J. B. (1999). Racial discrimination and psychiatric symptoms among Blacks. *Cultural Diversity and Ethnic Minority Psychology*; *5*: 329-339.

Koh D, Jeyaratnam J. (1998). Occupational health in Singapore. *Int Arch Occ Env hea.*;*71*(5):295-301.

Kompier, M. (2003). Job Design and Well-being. In M. Schabracq, J. Winnubst & C.L. Cooper, (Eds), *Handbook of Work and Health Psychology*, 429-454.

Kor, A.C., Lee H.S., Chee C.B., Wang Y.T. (2001). Occupational asthma in Singapore. *Singapore Medical Journal. 42*(8):373-7.

Kroeber, A. L., Kluckhohn, C. (1952). *Culture: a critical review of concepts and definitions*, USA: Papers of the Peabody Museum.

Kurz, D. (2002). *Poor Urban Mothers and the Care of Teenage Children*. New York: Routledge.

Kushnir, T., & Melamed, S. (1992). The Gulf War and burnout. *Psychological Medicine*, *22*, 987–995.

LaFramboise, T. D., Coleman, H. L. K., Gerton, J. (1993). Psychological Impact of Biculturalism: Evidence and Theory, *Psychological Bulletin*; *114* (3): 395-412.

Lazarus, R.S. (1991). Psychological Stress in the Workplace. In P.L. Perrewe (Ed.) Handbook on job stress [Special Issue]. *Journal of Social Behavior and Personality*, *6,* 7, 1-13.

Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Leavey G, Rozmovits L, Ryan L, King M. (2007). Explanations of depression among Irish migrants in Britain. *Social Science and Medicine 65*(2):231-244.

Lee, R., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. Journal of Applied Psychology, *81,* 123–133.

Lehman, D. R., Chiu, C.-Y. and Schaller, M. (2004): 'Psychology and culture'. *Annual Review of Psychology, 55*, 689–714.

Leiter,M.P. (1993), "Burnout as a developmental process: consideration of models", in Schaufeli, W.B., Maslach, C. and Marek, T. (Eds), Professional Burnout: Recent Developments in Theory and Research, Taylor and Francis, Washington, DC, 237-50.

Leiter, M. P., Harvie, P., & Frizzell, C. (1998). The correspondence of patient satisfaction and nurse burnout. *Social Science & Medicine*, *47,*1611–1617.

Levecque, K., Lodewyckx, I., & Vranken, J. (2007). Depression and generalised anxiety in the general population in Belgium: A comparison between native and immigrant groups. *Journal of Affective Disorders*, *97*, 229–239.

Levin,I. and Stokes,J.P.(1989). Dispositional approach to job satisfaction: Role of negative affectivity. *Journal of Applied Psychology*. 74,752-778.

Li, C.-Y., Chen, K.-R., Wu, C.-H. & Sung, F.-C. (2000). Job stress and dissatisfaction in association with non-fatal injuries on the job in a cross-sectional sample of petrochemical workers. *Occupational Medicine*, *51* (1), 50-55.

Li, L., Wang, H.M., Ye, X.J., Jiang, M.M., Lou, Q.Y., & Hesketh, T. (2007). The mental health status of Chinese rural-urban migrant workers: Comparison with permanent urban and rural dwellers. *Social Psychiatry and Psychiatric Epidemiology*, *42*(9), 716–722.

Likupe G. (2006), Experiences of African nurses in the UK National Health Service: A literature Review, *Journal of Clinical nursing, 15,* 1213 -1220.

Lilley, R., Feyer A.M., Kirk P., Gander P. (2002). A survey of forest workers in New Zealand. Do hours of work, rest, and recovery play a role in accidents and injury? *Journal of Safety Research. 33*(1):53-7.

Lind, S. L., Otte, F. L. (1994), Management Styles, Mediating Variables, and Stress Among HRD Professionals, *Human Resource Development Quarterly*, *5*(4): 301-316.

Lindert, J., Schouler-Ocak, M., Heinz, A., & Priebe, S. (2008). Mental health, health care utilisation of migrants in Europe. *European Psychiatry: The Journal of the Association of European Psychiatrists*, *23* (Suppl. 1), 14–20.

Lipscomb, H.J., Schoenfisch, A.L., & Shishlov, K.S. (2010). '*Non-fatal contact injuries among workers in the construction industry treated in U.S. emergency departments'*, 1998-2005, Journal of Safety Research, *41*, 191-95.

Lipson, J. (1991). Afghan Refugee Health: Some Findings and Suggestions. *Qualitative Health Research; 1*(3): 349-369.

Lipson,J. and Miller, S. (1994). Changing Roles in the U.S.Health Care for Women International; *15*(3):171-180.

Littlewood, R. (2006). Mental health and intellectual disability: culture and diversity. *Journal of Intellectual Disability Research. 50* (8) 555–60.

Liwowsky I, Kramer D, Mergl R, et al. (2009). Screening for depression in the older long-term unemployed. *Soc Psychiatry Psychiatr Epidemiol, 44*(8):622-627.

London, A. S., Scott, E. K., & Hunter, V. (2002). *Health-related carework for children in the context of welfare reform*. New York: Routledge.

Lu, L. (1999). Work motivation, job stress and employees' well-being. *Journal of Applied Management Studies, 8*: 61–72.

Lu, L., Cooper, C. L., Kao, S.-F., Zhou, Y. (2003), Work stress, control beliefs and wellbeing in Greater China – An exploration of sub-cultural differences between the PRC and Taiwan, *Journal of Managerial Psychology*, *18*: 479-510.

Ma, F., Lee D.J., Fleming L.E., Dosemeci M. (1998). Race-specific cancer mortality in US firefighters: 1984-1993. *Journal of Occupational & Environmental Medicine*, *40*(12):1134-8.

MacDonald, L.A., Karasek, R.A., Punnet, L. & Scharf, T. (2001). Covariation between workplace physical and psychosocial stressors: Evidence and implications for occupational health research and prevention. *Ergonomics, 44*(7), 696-718.

Madianos, M., Economou, M., Alexiou, T. & Stefanis, C. (2011). Depression and economic hardship across Greece in 2008 and 2009: Two cross sectional surveys nationwide. *Soc. Psychiatry Psychiatric Epidemiology*, *46:* 943-952.

Mark, G. M. and Smith, A. P. (2008). Stress models: a review and suggested new direction. In Houdmont, J. and Leka, S. (eds.) *Occupational Health Psychology*, (Nottingham University Press, Nottingham), 111-144.

Mark, G. and Smith, A. P. (2012a). Effects of occupational stress, job characteristics, coping, and attributional style on the mental health and job satisfaction of university employees. *Anxiety, Stress & Coping*, *25*(1), 63-78.

Mark, G. and Smith, A. P. (2012b). Occupational stress, job characteristics, coping, and the mental health of nurses. *British Journal of Health Psychology*, *17*(3), 505-521.

Martiniello, M. (1996), '*Italy: the late discovery of immigration*', in Thranhardt, D. (Ed.) Europe: A New Immigration Continent, Münster, LIT.

Matthews, K.A. & Gump, B.B. (2002). Chronic work stress and marital dissolution increase risk of posttrial mortality in men from the multiple risk factor intervention trial. *Archives of Internal Medicine, 162*(3), 309-315.

Mboup, M. (2000). *Les Se´ne´galais d'Italie. Emigre´s, agents du changement social.* Paris: L'Harmattan.

McClosky, L., Fernandez-Esquer, M.E., Southwick, K., & Locke, C. (1995). Psychological effects of political and domestic violence on Central American and Mexican immigrant mothers and children. *American Journal of Community Psychology, 23*, 95-116.

McCracken, S., Feyer A.M., Langley J., Broughton J., Sporle A. (2001). Maori work-related fatal injury, 1985-1994. *New Zealand Medical Journal.* 114(1139):395-9.

McDonnell L, Maginnis C, Lewis S, Pickering N, Antoniak M, Hubbard R, Lawson I, Britton J. (2003). Occupational exposure to solvents and metals and Parkinson's disease. *Neurology*.; *61*:716–717.

McGinnity, F. , O'Connell, P. , Quinn, E. and Williams, J. (2006). Migrants Experience of Racism and Discrimination in Ireland. *The Economic and Social Research Institute* (ESRI), Dublin.

McKay, S. (2007) .'*Migrant workers and health and safety*', presentation at ETUI-HESA seminar, 9-10.

McKee-Ryan F.M., Song Z, Wanberg C R and Kinicki A.J . (2005): Psychological and physical well-being during unemployment: A meta-analytic study. *Journal of Applied Psychology*; *90*: 53–76.

McKenzie, K., van Os. J., Fahy, T., Jones, P., Harvey, I., Toone, B. and Murray, R. (1995). Psychosis with good prognosis in Afro-Caribbean people now living in the United Kingdom, *British Medical Journal*; *311*: 325-328.

McNeely E. (2005). The consequences of job stress for nurses' health: time for a check-up. Nursing Outlook. *53*(6):291-299.

Meijman, T.F. and Mulder, G. (1998), "Psychological aspects of workload", in Drenth, P.J., Thierry, H. and de Wolff, C.J. (Eds), Handbook of Work and Organizational Psychology, 2nd ed., Erlbaum, Hove, pp. 5-33.

Melamed, S., Luz, Y., & Green, M. S. (1990). Noise exposure, noise annoyance and their relation to psychological distress, accident and sickness absence among blue-collar workers: The CORDIS study. *Israel Journal of Medical Sciences, 28,* 629-635.

Melamed, S., Yekutieli, D., Froom, P., Kristal-Boneh, E., & Ribak, J. (1999). Adverse work and environmental conditions predict occupational injuries. The Cardiovascular Occupational Risk Factors Determination in Israel (CORDIS) study. *American Journal of Epidemiology,50.*18-26.

Mghari, Mohamed, and Mohamed Fassi Fihri. (2010). *Cartographie des flux migratoires des Marocains en Italie*. Geneva : IOM.

Michie, S. and Williams, S. (2003). Reducing work related psychological ill-health and sickness absence: a systematic literature review. *Occupational and Environmental Medicine, 60:* 3-9.

Milkie, M. A., Mattingly, M. J., Nomaguchi, K. M., Bianchi, S. M., & Robinson, J. P. (2004). The time squeeze: Parental statuses and feelings about time with children. *Journal of Marriage and Family. 66*, 739-761.

Modood, T., Berthoud, R. and Lakey, J. *et al.* (1997). *Ethnic Minorities in Britain: Diversity and Disadvantage*. London: Policy Studies Institute Murphy, L. R. 1995, Managing job stress – An employee assistance/human resource management partnership, *Personnel Review, 24*(1): 41-50.

Moghaddam, E.M., Ditto, B., & Taylor, D.M. (1990). Attitudes and attributions related to psychological symptomatology in Indian immigrant woman. Journal of Cross-Cultural Psychology. *21*,335-339.

Mollel, A. (2000). *'Transnational practices of Ghanaians'*. London: University College London, Migration Research Unit, paper presented to the workshop on new African diasporas, 5 May.

Molyneux,C.J, McCarthy,G.M,MnEniff,S Cryan,M,Conroy,R.M. 2008.Prevalence and predictors of carer burden and depression in carers of patients referred to an old age psychiatric service. *International Psychogeriatrics*.

Moon, J.-H., & Pearl, J. H. (1991). Alienation of elderly Korean American immigrants as related to place of residence, gender, age, years of education, time in the U.S., living with or without children, and living with or without a spouse. *International Journal of Aging and Human Development*, *32*: 115–124.

Morris, J.A., & Feldman, D.C. (1996). The dimensions, antecedents, and consequences of emotional labour. *Academy of Management Review*, *21*, 986-1010.

Murray, R.F. Jr. (1986).Tests of so-called genetic susceptibility. *Journal of Occupational Medicine*. *28*(10):1103-7.

Nazroo, J. Y. (2003). The structuring of ethnic inequalities in health: Economic position, racial discrimination and racism. *American Journal of Public Health,* 93: 277-284.

Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work family conflict and family-work conflict scales. *Journal of Applied Psychology. 81*(4), 400-410.

Netemeyer, R., Johnston, M., Burton, S. (1990). Analysis of role conflict and role ambiguity in a structural equations framework. *Journal of Applied Psychology. 75*, 148–157.

NIOSH (1999). Stress at work. Publication no. 99-101. *Cincinnati: National Institute for*

Occupational Safety and Health.

Noh, S. and Kaspar V. (2003). Perceived Discrimination and Depression: Moderating Effects of Coping, Acculturation, and Ethnic Support, *American Journal of Public Health 93*(2): 232–238.

Nolen-Hoeksema, S., Morrow, H., & Fredrickson, B.L. (1993). Response styles and the duration of episodes of depressed mood. *Journal of Abnormal Psychology*, *102,* 20-28.

Oatley, K., & Johnson-Laird, P. (1987). Towards a cognitive theory of emotions. *Cognition and Emotion*, *1*, 29–50.

Ore, T., Stout N.A. (1997). Risk differences in fatal occupational injuries among construction laborers in the United States, 1980-1992. *Journal of Occupational & Environmental Medicine. 39*(9):832-43.

Ortony, A., Clore, G.L., & Collins, A. (1988). *The cognitive structure of emotions.* Cambridge: Cambridge University Press.

Palese, A., F. Oliverio, M.F. Girardo, E. Fabbro and L. Saiani. (2004). 'Difficulties and Workload of Foreign Caregivers: A Descriptive Analysis', *Diversity in Health and Social Care 1*: 31–8.

Palinkas, L.A., Colcord C.L. (1985). Health risks among enlisted males in the U.S. Navy: race and ethnicity as correlates of disease incidence. *Social Science & Medicine. 20*(11):1129-41.

Panayiotopoulos, Prodromos. (2005). The globalisation of care: Filipina domestic workers and care for the elderly in Cyprus.*Capital & Class*. 86:1-36.

Parkes, K. (1990). Personal control in an occupational context. In A. Steptoe, & A. Appels (Eds.), *Stress, personal control and health*, 21-48. Chichester, England: Wiley.

Parkes, K. (1994). Personality and coping as moderators of work stress processes: models, methods and measures. *Work & Stress*, *8*(2): 110-129.

Payne, R. A., Jick, T.D., & Burke, R.J. (1982). Wither stress research?: An agenda for the 1980's. *Journal of Occupational Behaviour*, *3*, 131-145.

Peterson, M.F., Smith, P.B., Akande, A., & Avestaran, S., et al. (1995). Role conflict, ambiguity and overload: a 21-nationwide study. *Academy of Management Journal*, *38*(2): 429-452.

Perkins, R. E., Moodley, P. (1993). Perception of problems in psychiatric inpatients: denial, race and service usage, *Social Psychiatry and Psychiatric Epidemiology*; *28*: 189-193.

Pernice, R., Brook, J. (1996). Refugees' and immigrants' mental health: Association of demographic and post-immigration factors. *J Soc Psychol. 136*:511–519.

Pernice, R., Trlin, A., Henderson, A., & North, N. (2000). Employment and mental health of three groups of immigrants to New Zealand. *New Zealand Journal ofPsychology. 29*, 24-28.

Perrewe, P.L., & Zellars, K.L. (1999). An examination of attributions and emotions in the transactional approach to the organizational stress process. *Journal of Organizational Behavior, 20*, 739-752.

Perry-Jenkins, M., Repetti, R. L., & Crouter, A. C. (2000). Work and family in the 1990s.*Journal of Marriage and the Family, 62*, 981-998.

Phinney, J. (1992). The multigroup ethnic identity measure: A new scale for use with diverse groups. *Journal of Adolescent Research, 7*: 156–176.

Phinney, J. S. (1996). When we talk about American ethnic groups, what do we mean?, *American Psychologist*, *51* (9): 918-927.

Pithers , R. T. , & Soden , R. (1998). Scottish and Australian teacher stress and strain: a comparative study . *British Journal of Educational Psychology* , *68* , 269 - 279.

Polverini, F., A. Principi, C. Balducci, M.G. Melchiorre, S. Quattrini, M.V. Gianelli and G. Lamura. (2004). *National Background Report for Italy*, EUROFAMCARE; at: www.uke.uni-hamburg.de/extern/eurofamcare/documents/nabare_italy_rc1_a5.pdf

Quayhagen. M.P.,& Quahagen. M. (1998).Alzheimer's stress: Coping wih the caregiving role. The Geronotologist, *28*, 391-396.

Ragland, D.R., Greiner B.A., Krause N., Holman B.L. Fisher J.M. (1995). Occupational and nonoccupational correlates of alcohol consumption in urban transit operators. *Preventive Medicine. 24*(6):634-45.

Redfield, R., Linton, R., & Herskovits, M.J. (1936). Memorandum for the study of acculturation. *American Anthropologist, 38*: 149-152.

Reyneri, E. (2001). "Il diverso punto di vista della sociologia". in: L. Brucchi (a cura di), Manuale di economia del lavoro, Bologna: il Mulino, 487-504.

Reyneri, E. (2002). *Sociologia del Mercato del Lavoro*, Il Mulino, Bologna.

Reyneri, E. (2004).*"Education and the occupational pathways of migrants in Italy".* In: Journal of Ethnic and Migration Studies, vol. 30, n. 6, pp. 1145-1162.

Rhodewalt, F., Morf, C., Hazlett, S., & Fairfield, M. (1991). Self-handicapping: The role of discounting and augmentation in the preservation of self-esteem. *Journal of Personality and Social Psychology*, *61*, 122–131.

Riccio, B. (2003). 'La comunita` ghanese in Emilia-Romagna', in Stocchiero, A. (ed.) Migranti e cooperazione decentrata italiana per lo sviluppo africano. Rome: CeSPI.

Roberts, R. K., Swanson, N. G. and Murphy, L. R. (2004). Discrimination and occupational mental health. *Journal of Mental Health, 13*: 129-142.

Robjant, K., Robbins, I., & Senior, V. (2009). Psychological distress amongimmigration detainees: A cross-sectional questionnaire study. *The British Journal of Clinical Psychology/ The British Psychological Society*, *48(*pt. 3), 275–286.

Rosenman. R., (1991). Type A behavior pattern and coronary heart disease: The hostility factor?. *Stress and Health. 7*(4), 245–253.

Rosmond, R., Lapidus, L. and Björntorp, P. (1998): A cross-sectional study of self-reported work conditions and psychiatric health in native Swedes and immigrants. Occupational Medicine *48*(5) 1998, 309-314.

Sakamoto, M., Vaughan J., Tobias B. (2001). Occupational health surveillance strategies for an ethnically diverse Asian employee population. *AAOHN Journal. 49*(5):235-42.

Schaubroeck, J. (1999). Should the subjective be the objective? On Studying mental processes, coping behaviour, and actual exposures in organizational stress research. *Journal of Organizational Behavior*, *20*, 753-760.

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior, 25,* 293-315.

Schaufeli, W.B., Bakker, A.B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behavior*, *30*, 893–917.

Schulz, M.R., Loomis D. (2000). Occupational bladder cancer mortality among racial and ethnic minorities in 21 states. *American Journal of Industrial Medicine. 38*(1):90-8.

Seedat, S., Scott, K.M., Angermeyer, M.C., Berglund, P., Bromet, E.J., Brugha, T.S.,Demyttenaere, K., de Girolamo, G., Haro, J.M., Jin, R., Karam, E.G., Kovess-Masfety, V.,Levinson, D., Mora, M.E., Ono, Y., Ormel, J., Pennell, B., Posada-Villa, J., Sampson,

N.A.,Williams, D., & Kessler, R.C. (2009). Cross-national associations between gender and mental disorders in the World Health Organization world mental health surveys. *Archives of General Psychiatry, 66*(7): 785–795.

Seligman, M.E.P., Abramson, L.Y., Semmel, A. and von Baeyer, C. (1979). Depressive attributional style, *Journal of Abnormal Psychology, 88*: 242–7.

Semmer, N.K. (2003). Individual Differences, Work Stress and Health. In M.J. Schabracq, J.A.M. Winnubst, & C.L. Cooper (Eds.) *The Handbook of Work and Health Psychology.*

Shields, M. and Price, S. (2002): The English language fluency and occupational success of ethnic minorities' immigrant men living in English metropolitan areas. Journal of population Economics, (15); *1*, 137-160.

Siegrist, J. (1996). The effort-reward imbalance model. *Journal of Occupational Health Psychology.* 1: 27–41.

Siegrist, J., Dagmar Starke, D., Chandola, T., Godin, I., Marmot, M.,Niedhammer, I., Peter, R. (2004). The measurement of effort-reward imbalance at work: European comparisons. *Social Science and Medicine*, *58*, 1483–1499.

Siegrist, J., Dittmann, K., Rittner, K., & Weber, I. (1982). The social context of active distress in patients with early myocardial infarction. *Social Science and Medicine*, *16*, 443–453.

Siegrist, J., & Klein, D. (1990). Occupational stress and cardiovascular reactivity in blue-collar workers. *Work and Stress*, *4*(4), 295–304.

Siegrist J., & Peter, R. (2000). The effort-reward imbalance model. The workplace and cardiovascular disease. *Occupational Medicine: State of the Art Reviews*, *15*,83-87.

Skotte JH, Essendrop M, Hansen AF, Schibye B.2002. A dynamic 3D biomechanical evaluation of the load on the low back during different patient-handling tasks. *J Biomech*, 35:1357-1366.

Sluzki,C.E. (1986). Migration and family conflict. In R.H.Moos (Ed.), *Coping with life Crises* (pp. 277-288). New York:Plenum.

Smith, A., Johal, S., Wadsworth, E and al. (2000). *The Scale and Impact of Occupational Stress: the Bristol Stress and Health at Work Study*. (Health & Safety Executive Research Report 265. HSE Books, London, UK).

Smith, C.A., & Kirby, L.D. (2001). Affect and cognitive appraisal processes. In J.P. Forgas (ed.), *Handbook of Affect and Social Cognition* (pp. 75–92). New Jersey: Erlbaum.

Smith, A., Wadsworth, E., Shaw, C., Stansfeld, S., Bhui, K. and Dhillon, K. (2005). *Ethnicity, work characteristics, stress and health*. (Health & Safety Executive Research Report 308. HSE Books, London, UK).

Sornprasit, Sathaporn. (2001). The basic need of buying housing development in Chiang Mai in 2001. Independent Study, *Master of Economics*, Chiang Mai University.

Spanish Working Conditions survey. (2005). On printing process. Main results. *Seguridad y salud en el trabajo*. Nº 38. Julio 2006.

Spector, P. E. (2003). Individual differences in health and well-being in organizations. In D.A. Hoffman, & L.E. Tetrick (Eds). *Health and Safety in Organizations: A Multilevel Perspective.*

Spector, P.E., & Jex, S.M. (1998). Development of four self-report measures of job stressors and strain: Interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology. 3*(4), 356–367.

Spence, J. T., Helmreich, R. L. & Pred, R. S. (1987). Impatience versus Achievement Striving in the Type A pattern: Differential effects on student's health and academic achievement. *Journal of Applied Psychology*, *4*, 522–528.

Stacey, C. L. (2005). ''Finding Dignity in Dirty Work: The Constraints and Rewards of Low-Wage Home Care Labour.'' *Sociology of Health and Illness 27* (6): 831–54.

Stenlund, B., Lindbeck, L., Karlsson, D. (2002). Significance of house painters' work techniques on shoulder muscle strain during overhead work. *Ergonomics* 45 (6):455–468.

Sugarman, P. A., Craufurd, D. (1994). Schizophrenia in the Afro-Caribbean community, *British Journal of Psychiatry*; *164*: 474-480.

Sutherland, V. J. , & Cooper , C. L. (1988). Sources of work stress . In J. J. Hurrell , Jr. , L. R. Murphy , S. L. Sauter , & C. L. Cooper (Eds.), *Occupational stress: issues and developments in research.* London, UK : Taylor & Francis .

Syme, S. L. (1989). Social epidemiology and the work environment. *International Journal of Health Services,18,* 635-645.

Szczepura, A., Gumber, A., Clay, D., Davies, R., Elias, P., Johnson, M., Walker, I. and Owen, D. (2004). *Review of the occupational health and safety of Britain's ethnic minorities.* (Health & Safety Executive Research Report 221. HSE Books, London, UK).

Tafalla, R.J. & Evans. G.W. (1997). Noise, physiology, and human performance: The potential role of effort. *Journal of Occupational Health Psychology, 2*(2), 148-155.

Takeuchi, D.T., Zane, N., Hong, S., Chae, D.H., Gong, F., Gee, G.C., Walton, E., Sue, S., & Alegrı´a, M. (2007). Immigration-related factors and mental disorders among Asian Americans. American Journal of Public Health, *97*(1), 84–90.

Taris, T.W., Schreurs, P.J.G., & Van Iersel-Van Silfhout, I.J. (2001). Job stress, job strain, and psychological withdrawal among Dutch university staff: towards a dual process model for the effects of occupational stress. *Work & Stress*, *15*, 4, 283-296.

Terry, D.J., Nielsen, N. and Perchard, L. (1993). Effects of work on psychological wee-being and job satisfaction: The stress-buffering role of social support. *Australian Journal of Psychology, 45,* 168-175.

Thompson, R.A.(1991). Emotional regulation and emotional development. *Educational Psychology Review, 3:* 269–307.

Triandafyllidou, A. (2000). The Political Discourse on Immigration in Southern Europe: A Critical Analysis. *Journal of Community & Applied Social Psycholoy. 9:* 262-278.

Triandis, H. C., Bontempo, R., Betancourt, H., Bond, M., Leung, K., Brenes, A., Georgas, J., Hui, C. H., Marin, G., Setiadi, B., Sinha, J. B. P., Verma, J., Spangenberg, J., Touzard, H., de Montmollin, G. (1986). The Measurement of the Ethnic Aspects of Individualism and Collectivism Across Cultures, *Australian Journal of Psychology*; *38* (3): 257-267.

Troxel, W. M., Matthews, K. A., Bromberger, J. T., and Sutton-Tyrrell, K. (2003). Chronic stress burden, discrimination, and subclinical carotid artery disease in African American and Caucasian women. *Health Psychology. 22*: 300–309.

Ulusahin, A., Basoglu, M., & Paykel, E.S., (1994), A cross-cultural comparative study of depresive symptoms in British and Turkish clinical samples. *Social Pshichiatry and Psychiatric Epidemiology*, *29*, 31-39.

Valtolina, G.G.(2006). *Tra bisogno di identita' e desiderio di appartenenza. Il benessere psicologico dei minori stranieri*, in Valtolina G.G., Marazzi A., a cura di.

Van der Doef, M., & Maes, S. (1999). The Job-Demand (-Support) Model and psychological well-being: a review of 20 years of empirical research. *Work & Stress*, *13*, 2, 87-114.

Van der Molen, H.F., Kuijer, P.P.F.M., Hopmans, P.P.W., Houweling A.G., Faber G.S., Hoozemans, M.J.M., Frings-Dresen, M.H.W. (2008). Effect of block weight on work demands and physical workload during masonry work. *Ergonomics 51*(3):355–366.

Van der Molen, H.F.,Veenstra, S.J., Sluiter, J.K, Frings-Dresen, M.H.W. (2004).World at work: Bricklayers and bricklayers' assistants. *Occup Environ Med.* 61(1):89–93.

Van Der Wurff, F. B., Beekman, A. T., Dijkshoorn , F .H. et al. (2004)."Prevalence and risk-factors for depression in elderly Turkish and Moroccan migrants in the Netherlands," *Journal of Affective Disorders*, 83, no. 1, pp. 33–41.

Vansteenkiste, M., Neyrinck, B., Niemic, C., Soenens, B., De Witte, H. & Van den Broeck, A. (2007). Examining the relations among extrinsic versus intrinsic work value orientations, basic need satisfaction, and job experience: A Self-Determination Theory approach. *Journal of Occupational and Organizational Psychology*, *80*, 251-277.

Vega, W. A., Kolody, B., & Valle, J. R. (1987). Migration and mental health: An empirical test of depression risk factors among immigrant Mexican women. *International Migration Review, 21*(3), 512-530.

Venkatesh, A. (1995). Ethnoconsumerism: A new paradigm to study cultural and crosscultural consumer behaviour, in *Marketing in a Multicultural World Ethnicity,Nationalism and Cultural Identity*, Costa, J. A. and Bamossy, G. (Eds); 68-104, Beverley Hills, USA: Sage.

Viswesvaran, C. & Ones, D.S. (1995). Theory testing: Combining psychometric metaanalysis and structural equations modelling. *Personnel Psychology*, *48,* 865-885.

Vos, G. (1975). Ethnic Pluralism: conflict and accommodation, in *Ethnic Identity: Cultural continuities and change*, de Vos, G. and Lola Romanucci-Ross, L. (Eds); 1-22, Chicago, USA: University of Chicago Press.

Wagener, D.K., Walstedt J., Jenkins L., Burnett C., Lalich N., Fingerhut M. (1997). Women: work and health. *Vital & Health Statistics - Series 3, Analytical & Epidemiological Studies*. 31:1-91.

Walcott-McQuigg, J. A. (1994). Worksite stress: gender and cultural diversity issues. *American Association of Occupational Health Nurses Journal. 42*(11): 528-533.

Wall, T.D., Jackson, P.R., Mullarkey, S., & Parker, S. (1996). The demands-control model of job strain: A more specific test. *Journal of Occupational and Organizational Psychology, 69*, 153-166.

Wang, X., Sangalang, P.J.(2005). Work adjustement and Job Satisfaction of Filipino Immigrant Employees in Canada. *Canadian Journal of Administrative Sciences. 22*(3).243-254.

Warr, P., Cook, J. and Wall, T. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. *The Journal of Occupational Psychology 52*: 129-148.

Watson, D., & Clark, L. A. (1984). Negative Affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin, 96,* 465-490.

Webster R, McDonald R, Lewin T, Carr V. (1995).Effects of a natural disaster on immigrants and host population. *Journal of Nervous and Mental Disease*, *183*:390–397.

Weddle, M.G., Bissell R.A., Shesser R. (1993). Working women at risk. Results from a survey of Hispanic injury patients. *Journal of Occupational Medicine. 35*(7):712-5, July.

Weinberg, A and Creed, F. (2000). *'Stress and psychiatric disorder in healthcare professionals and hospital staff'* , The Lancet, 355 (9203) , pp. 533-537.

Westermeyer, W., Neider, J. and A. Callies. (1989). "Psychosocial Adjustment of Hmong Refugees During their First Decade in the United States: A Longitudinal

Study." Journal of Nervous and Mental Disease 177: 132-139.aters, M., Eschbach, K. (1995). Immigration and ethnic and racial inequality in the United States, *Annual Review of Sociology*; *21*: 419-446.

White, R. (1959). "Motivation reconsidered: the concept of competence", *Psychological Review*, Vol. 66, pp. 297-333.

Williams, F. (2010). 'Migration and care: themes, concepts and challenges'. *Social Policy and Society. 9* (3): 385-396.

Williamson, G.M.,& Schulz, R. (1993). Coping with specific stressors in Alzheimer's Disease caregiving. *The Geronotologist*, *33,* 747-755.

Wilson, S.H, Walker, G.M.(1993). Unemployment and health: a review. *Public Health*, 107(3)**:**153-162.

Wohl, A.R., Morgenstern H., Kraus J.F. (1995). Occupational injury in female aerospace workers. *Epidemiology*. 6(2):110-4.

Wong, S., Bond, M.H. and Rodriguez Mosquera, P.M. (2008). The influence of cultural value orientations on self-reported emotional expression across cultures', *Journal of Cross-Cultural Psychology, 39*: 224-9.

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management, 14*, 121–141.

Yee, B., Campbell A., Beasley R., Neill A. (2002). Sleep disorders: a potential role in New Zealand motor vehicle accidents. *Internal Medicine Journal. 32*(7):297-304, July.

Yen, I.H., Ragland D.R., Greiner B.A., Fisher J.M. (1999). Workplace discrimination and alcohol consumption: findings from the San Francisco Muni Health and Safety Study. *Ethnicity & Disease*. *9*(1):70-80.

Yu, L., Chiu, C.-H., Lin, Y.-S., Wang, H.-H., & Chen, J.-W. (2007). Testing a model of stress and health using meta-analytic path analysis. *Journal of Nursing Research, 15*(3), 202–214.

Zabaleta, E. (2004): *Inserción y Dinámicas Laborales de los trabajadores inmigrantes.* Imserso. Julio.

Zamagni, S. (2000). *Dalle politiche di integrazione dei migranti alla politica del riconoscimento delle diversità*, in «Studi Emigrazione/Migration Studies», *138*, pp. 229-246.

Zanalta, A.L. (2005) 'Lavoro di Cura, Genere e Migrazioni' in *Famiglie e Politiche di Welfare in Italia: Interventi e Pratiche*. Bologna, Italy: IL Mulino.

Zuckerman, J. (1990). Some dubious premises in research and theory on racial differences, *American Psychologist*; *45*(December): 1297-1303.

Appendices

Appendix 3.1: Correlations between subscales for Ethnicity dimensions and Health outcomes, Chapter 3

ETHNICITY DIMENSIONS

Correlations between Ethnicity dimensions (BAS, MIEM and Discrimination)

	Search Ethnic Identity	Affirmation belonging commitment	Mantainance Culture	Adoption host culture	Discrimination at work
Search Ethnic Identity	1	,576(**)	,008	-,284(**)	,079
Affirmation-belonging - commitment	,576(**)	1	,089	-,209(**)	,165(**)
Mantainance Culture	,008	,089	1	-,298(**)	,163(**)
Adoption host culture	-,284(**)	-,209(**)	-,298(**)	1	-,089
Racial Discrimination at work	,079	,165(**)	,163(**)	-,089	1

** Correlation is significant at the 0.01 level

MAIN OUTCOME MEASURES

Correlations between Psychological distress subscales (SCL 90)

	Somatization	Obsessive Compulsive	Interpersonal Sensitivity	Depression	Anxiety	Hostility	Phobic Anxiety	Paranoid Ideation	Psychoticism
Somatization	1	,385(**)	,190(**)	,603(**)	,546(**)	-,075	-,112	,403(**)	,110
Obsessive Compulsive	,385(**)	1	,503(**)	,467(**)	,380(**)	,427(**)	,022	,410(**)	,343(**)
Interpersonal Sensitivity	,190(**)	,503(**)	1	,282(**)	,267(**)	,418(**)	,248(**)	,449(**)	,363(**)
Depression	,603(**)	,467(**)	,282(**)	1	,530(**)	,130(*)	-,063	,486(**)	,163(**)
Anxiety	,546(**)	,380(**)	,267(**)	,530(**)	1	,174(**)	,116	,399(**)	,333(**)
Hostility	-,075	,427(**)	,418(**)	,130(*)	,174(**)	1	,383(**)	,323(**)	,395(**)
Phobic Anxiety	-,112	,022	,248(**)	-,063	,116	,383(**)	1	,012	,463(**)
Paranoid Ideation	,403(**)	,410(**)	,449(**)	,486(**)	,399(**)	,323(**)	,012	1	,149(*)
Psychoticism	,110	,343(**)	,363(**)	,163(**)	,333(**)	,395(**)	,463(**)	,149(*)	1

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Appendix 3.2: Correlations between the factors extracted for the overall sample and each ethnic group. Ethnicity dimensions and Health outcomes, Chapter 3

OVERALL SAMPLE FACTORS	EASTERN EUROPEAN CARE WORKERS FACTORS			
	Anxious-Depress. Disorders	Interper/ Relation. Disorders	Search/ Affirmation Identity	Acculturation Strategies
Anxious-Depressive Disorders	,960(**)	-,020	,113	,294(**)
Relational Disorders	,596(**)	,542(**)	-,175(**)	,048
Affirmation/ Maintenance Culture	-,023	-,056	,906(**)	-,374(**)
Search Identity /Adoption host Culture	,227(**)	-,346(**)	,870(**)	,396(**)

OVERALL SAMPLE FACTORS	MOROCCAN FACTORY WORKERS FACTORS			
	Antisocial Disorders	Anxiety/ Depressive Disorders	Search Identity /Adoption host Culture	Affirmation/ Maintenance Culture
Anxious-Depressive Disorders	-,211(**)	,621(**)	,260(**)	,037
Relational Disorders	-,178(**)	,844(**)	,099	-,058
Affirmation/Maintenance Culture	-,033	-,006	-,069	,644(**)
Search Identity /Adoption host Culture	-,091	,238(**)	,733(**)	-,017

OVERALL SAMPLE FACTORS	GHANAIAN MASONS				
	Antisocial Disorders	Anxiety Disorders	Depressive Disorders	Cultural Identity	Acculturation strategies
Anxious-Depressive Disorders	**,302(**)**	**,515(**)**	**,399(**)**	-,261(**)	-,002
Relational Disorders	**, 336(**)**	**,281(**)**	**,238(**)**	,173(*)	,024
Affirmation/ Maintenance Culture	-,019	-,002	-,106	**-,032**	**-,740(**)**
Search Identity /Adoption host Culture	-,222(**)	-,158(*)	-,022	**,409(**)**	**-,379(**)**

Appendix 4.1: Correlations between subscales for Work Characteristics and Appraisals and Correlations between the factors extracted for the overall sample and each ethnic group (Work Characteristics), Chapter 4

WORK CHARACTERISTICS

Correlations between ERI subscales

	Effort	Job Security Prospects Reward	Esteem Reward	Overcommitment
Effort	1	,256(**)	-,436(**)	,575(**)
Job Security Prospects Reward	,256(**)	1	,118	,189(**)
Esteem Reward	-,436(**)	,118	1	-,347(**)
Overcommitment	,575(**)	,189(**)	-,347(**)	1

** Correlation is significant at the 0.01 level

Correlations between Demand-Control-Support subscales

	Job Demands	Social Support	Skill discretion	Decision Authority	Job Insecurity
Job Demands	1	,096	-,197(**)	-,076	-,290(**)
Social Support	,096	1	,164(**)	,024	-,384(**)
Skill discretion	-,197(**)	,164(**)	1	,056	,148
Decision Authority	-,076	,024	,056	1	-,080
Job Insecurity	-,290(**)	-,384(**)	,148	-,080	1

** Correlation is significant at the 0.01 level

APPRAISALS

Correlations between Job satisfaction subscales

	Employee relations satisfaction	Intrinsic and job itself satisfaction	Working conditions satisfaction	Extrinsic job satisfaction
Employee relations satisfaction	1	-,063	,111	,317(**)
Intrinsic and job itself satisfaction	-,063	1	,490(**)	,475(**)
Working conditions satisfaction	,111	,490(**)	1	,442(**)
Extrinsic job satisfaction	,317(**)	,475(**)	,442(**)	1

** Correlation is significant at the 0.01 level

OVERALL SAMPLE FACTORS	EASTERN EUROPEAN CAR WORKERS		
	Work Demands	Intrinsic/ Extrinsic Rewards	Work resources
Intrinsic/ Extrinsic Rewards	-,142(*)	,753(**)	,552(**)
Work Demands	,943(**)	-,034	-,228(**)
Work Resources	-,173(**)	,172(**)	,616(**)

OVERALL SAMPLE FACTORS	MOROCCAN FACTORY WORKERS		
	Work Resources	Intrinsic/ Extrinsic Rewards	Work Demands
Intrinsic/ Extrinsic Rewards	, 626(**)	, 734(**)	,219(**)
Work Demands	-,185(**)	-,605(**)	,662(**)
Work Resources	,630(**)	,320(**)	-,008

OVERALL SAMPLE FACTORS	GHANAIAN MASONS		
	Work Demands	Intrinsic/ Extrinsic Rewards	Work Resources
Intrinsic/ Extrinsic Rewards	-,194(**)	,824(**)	,227(**)
Work Demands	,873(**)	-,078	-,003
Work Resources	-,077	,152(*)	,517(**)

Appendix 6.1: Logistic regression analyses: independent variables (without ethnicity dimensions) on health outcomes, Chapter 6

Multi-variable associations of significant independent variables with Anxious-Depressive disorders (only the last step of the analyses is shown)

Variables	OR	CI
Work Demands		
Low	1.00	
High	3.123	2.073-6.465
Objective Coping		
Low	1.00	
High	.570	.353-.952
Type A behaviour		
Low	1.00	
High	3.497	2.205-7.414
Social Inhibition		
Low	1.00	
High	3.360	2.161-6.847
Work Stress		
Low	1.00	
High	1.975	1.374-3.978
Total Job Satisfaction		
Low	1.00	
High	.514	.320-.933

Multi-variable associations of significant independent variables with Relational disorders (only the last step of the analyses is shown)

Variables	OR	CI
Work Demands		
Low	1.00	
High	1.929	1.306-2.883
Rewards		
Low	1.00	
High	.566	.373-.854
Work resources		
Low	1.00	
High	.360	.156-.734
Objective Coping		
Low	1.00	
High	.566	.346-.833
Emotional Coping		
Low	1.00	
High	.497	.284-.995
Total Job Satisfaction		
Low	1.00	
High	.331	.130-.714

Multi-variable associations of significant independent variables with General Health (only the last step of the analyses is shown)

Variables	OR	CI
Work demands		
Low	1.00	
High	2.952	1.950-5.962
Rewards		
Low	1.00	
High	.469	.240-.862
Objective Coping		
Low	1.00	
High	.556	.382-.893
Type A behaviour		
Low	1.00	
High	3.271	2.121-6.310

Appendix 6.2: Correlations between subscales for Individual characteristics and Correlations between the factors extracted for the overall sample and each ethnic group (Individual characteristics), Chapter 6

INDIVIDUAL CHARACTERISTICS

Correlations between Coping styles subscales

	Social Support	Task strategies	Logic	Home-work relationships	Time management	Involvement
Social Support	1	,342(**)	,171(**)	-,016	,233(**)	,280(**)
Task strategies	,342(**)	1	,324(**)	,067	,180(**)	,223(**)
Logic	,171(**)	,324(**)	1	-,004	,217(**)	-,046
Home-work relationships	-,016	,067	-,004	1	,325(**)	,069
Time management	,233(**)	,180(**)	,217(**)	,325(**)	1	-,039
Involvement	,280(**)	,223(**)	-,046	,069	-,039	1

** Correlation is significant at the 0.01 level

Correlations between Type A subscales

	Time-conscious behaviour	Emotional suppressive/Ambitious and competitive behaviour	Efficient behaviour
Time-conscious behaviour	1	,078	,389(**)
Emotional suppressive/Ambitious and competitive behaviour	,078	1	-,249(**)
Efficient behaviour	,389(**)	-,249(**)	1

** Correlation is significant at the 0.01 level

OVERALL SAMPLE FACTORS	EASTERN EUROPEAN CARE WORKERS				
	Emotional/ relational coping	Objective Coping	Manag. Family-work roles	Impatient/ Proactive Behavior	Emotional/ Competitive behavior
Emotional/ Relational Coping	**,673(**)**	**-,001**	**,713(**)**	,052	,269(**)
Objective Coping	**,180(**)**	**,968(**)**	**,039**	-,193(**)	,188(**)
Type A	-,087	-,024	,137(*)	**,918(**)**	**,558(*)**

OVERALL SAMPLE FACTORS	MOROCCAN FACTORY WORKERS		
	Emotional/ Relational Coping	Objective Coping	Type A
Emotional/Relational Coping	**,906(**)**	**-,401(**)**	-,084
Objective Coping	**-,266(**)**	**,910(**)**	,177(**)
Type A	-,043	,187(**)	**,869(**)**

OVERALL SAMPLE FACTORS	GHANAIAN MASONS			
	Seek Support/ Focused Coping	Emotional/ Relational Coping	Objective Coping	Type A
Emotional/ Relational Coping	**,445(**)**	**,895(**)**	**-,003**	-,232(**)
Objective Coping	**,674(**)**	**-,497(**)**	**,473(**)**	,115
TypeA	-,170(*)	-,138	-,010	**,431(**)**

Appendix 6.3: Crosstab and Chi-square: independent variables on health outcomes, Chapter 6

Association between ANXIOUS-DEPRESSIVE DISORDERS and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Low Anxious-Depressive Disorders N (%)	High Anxious-Depressive Disorders N (%)	P
Low Work Demands	271 (60,5)	177 (39,5)	,000
High Work Demands	177 (39,4)	**272 (60,6)**	
Low Work Resources	174 (38,8)	275 (61,2)	,044
High Work Resources	**274 (61,2)**	174 (38,8)	
Low Emotional-Relational Coping	205 (45,6)	245 (54,4)	,021
High Emotional-Relational Coping	**243 (54,4)**	204 (45,6)	
Low Objective Coping	182 (40,7)	265 (59,3)	,000
High Objective Coping	**266 (59,1)**	184 (40,9)	
Low Type A behaviour	318 (70,7)	132 (29,3)	,000
High Type A behaviour	130 (29,1)	**317 (70,9)**	
Low Social Inhibition	272 (63,0)	160 (37,0)	,000
High Social Inhibition	176 (37,8)	**289 (62,2)**	
Low Work Stress	234 (57,2)	175 (42,8)	,008
High Work Stress	214 (43,9)	**274 (56,1)**	
Low Affirmation/Maintenance Culture	137 (39,0)	214 (61,0)	,000
High Affirmation/Maintenance Culture	**217 (62,7)**	129 (37,3)	
Low Perceived Discrimination	227 (65,2)	121 (34,8)	,000
High Perceived Discrimination	127 (36,4)	**222 (63,6)**	

Association between RELATIONAL DISORDERS and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Low Relational Disorders N (%)	High Relational Disorders N (%)	P
Low Work Demands	278 (61,9)	171 (38,1)	,000
High Work Demands	170 (37,9)	**278 (62,1)**	
Low Rewards	156 (34,8)	292 (65,2)	,000
High Rewards	**292 (65,0)**	157 (35,0)	
Low Objective Coping	138 (30,7)	312 (69,3)	,000
High Objective Coping	**310 (69,4)**	137 (30,6)	
Low Job Satisfaction	172 (39,2)	267 (60,8)	,000
High Job Satisfaction	**276 (60,4)**	181 (39,6)	
Low Perceived Discrimination	232 (66,1)	119 (33,9)	,000
High Perceived Discrimination	120 (34,7)	**226 (65,3)**	
Low Search Identity/Adopt host Culture	124 (35,6)	224 (64,4)	,000
High Search Identity/Adopt host Culture	**228 (65,3)**	121 (34,7)	

Association between General Health and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Good General Health N (%)	Poor General Health N (%)	*P*
Low Rewards	243(54,1)	206 (45,9)	,008
High Rewards	**269 (63,0)**	158 (37,0)	
Low Work Demands	272(63,0)	160(37,0)	,000
High Work Demands	176(37,8)	**289(62,2)**	
Low Objective Coping	233 (53,9)	199 (46,1)	,011
High Objective Coping	**279 (62,4)**	168 (37,6)	
Low Type A behaviour	337 (74,9)	113 (25,1)	,000
High Type A behaviour	175 (40,8)	**254 (59,2)**	
Low Affirmation/Maintenance Culture	202 (61,2)	128(38,8)	,000
High Affirmation/Maintenance Culture	**248(71,1)**	101(28,9)	

Appendix 6.4: ANOVA of Work demands and Work resources/Rewards, Coping strategies, Ethnicity dimensions, Appraisals on Health outcomes, Chapter 6

	Anxious- Depressive disorders	
	F	*p*
Main effects		
Work Demands	5.801	**.016**
Objective coping	5.153	**.024**
Type A behaviour	5.907	**.015**
Social Inhibition	11.368	**.001**
Work Stress	5.413	**.020**
Perceived Discrimination	8.575	**.004**
Affirmation/Maintenance culture	6.020	**.014**

	Relational disorders	
	F	*p*
Main effects		
Work Demands	10.645	**.001**
Rewards	7.419	**.007**
Objective coping	7.761	**.005**
Job satisfaction	4.376	**.037**
Search Identity/Adoption of the host culture	6.131	**.014**
Perceived racial discrimination	5.195	**.023**

	Health status	
	F	*p*
Main effects		
Work Demands	7.726	**.006**
Rewards	6.259	**.013**
Objective coping	5.680	**.017**
Type A behavior	8.750	**.003**
Affirmation/Maintenance culture host culture	5.962	**.015**

Appendix 7.1: Descriptive Statistics, Crosstabs and Chi-square analyses, Logistic regression analyses for migrant and Italian groups, Chapter 7

Descriptive Statistics

Descriptive statistics of migrant workers (Age Mean= 41, 43; SD= 4, 14)

Descriptives	N	%
Gender		
Female	287	41
Male	413	59
Ethnicity		
Eastern European	250	35.7
Moroccan	250	35.7
Ghanaian	200	28.6
Type of Job		
Eldercare	250	35.7
Factory Worker	250	35.7
Masons	200	28.6
Marital Status		
Married	668	95.4
Unmarried	32	4.6
Education		
Middle School	336	48
High School	353	50.6
Degree	10	1.4
Work Status		
Part-time	464	66.3
Full-time	236	33.7
Contract type		
Fixed term contract	335	47.9
Temporary/casual	365	52.1

Descriptive statistics of Italian workers (Age Mean= 41, 40; SD= 4, 10)

Descriptives	N	%
Gender		
Male	200	100
Ethnicity		
Italian	200	100
Marital Status		
Married	192	96,0
Unmarried	8	4,0
Type of Job		
Factory worker	100	50
Masons	100	50
Education		
Primary School	12	6,0
Middle School	90	45,0
High School	98	49,0
Work Status		
Part-time	99	49,5
Full-time	101	50,5
Contract type		
Permanent contract	81	40,5
Fixed term contract	102	51,0
Temporary/casual	17	8,5

Crosstabs and chi square analyses

Association between Anxious-Depressive disorders and significant independent variables (individual characteristics, work characteristics, appraisals)

All independent variables	Migrant workers			Italian workers		
	Low Anxious-Depressive Disorders N (%)	High Anxious-Depressive Disorders N (%)	*P*	Low Anxious-Depressive Disorders N (%)	High Anxious-Depressive Disorders N (%)	*p*
Low Emotional/Relational coping	154 (46)	181 (54)	.024	39 (39.0)	61 (61.0)	.009
High Emotional/Relational coping	**194 (53.6)**	168 (46,4)		**61 (61.0)**	39 (39.0)	
Low Objective coping	161(46.1)	188 (53.9)	.025			n.s.
High Objective coping	**187 (53.7)**	161 (46.3)				
Low Type A behavior			n.s.			n.s.
High Type A behavior						
Low Negative affectivity			n.s.			n.s.
High Negative affectivity						
Low Social inhibition	154 (45.2)	187 (54.8)	.018			n.s.
High Social inhibition	**194 (54.5)**	162 (45.5)				
Low Intrinsic/extrinsic rewards			n.s.	40 (40.0)	60 (60.0)	.011
High Intrinsic/extrinsic rewards				**60 (60.0)**	40 (40.0)	
Low Work demands	200 (57.5)	148 (42.5)	.006	56 (56.6)	43 (43.4)	.016
High Work demands	148 (42.4)	**201 (57.6)**		44 (43.6)	**57 (56.4)**	
Low Work resources			n.s.			n.s.
High Work resources						
Low Job satisfaction			n.s.	42 (40.4)	62 (59.6)	.011
High Job satisfaction				**58 (60.4)**	38 (39.6)	
Low perceived work stress			n.s.			n.s.
High perceived work stress						

Association between Relational disorders and significant independent variables (individual characteristics, work characteristics, appraisals)

All independent variables	Migrant workers			Italian workers		
	Low Relational Disorders N (%)	High Relational Disorders N (%)	*P*	Low Relational Disorders N (%)	High Relational Disorders N (%)	*P*
Low Emotional/Relational coping			n.s.			n.s.
High Emotional/Relational coping						
Low Objective coping			n.s.			n.s.
High Objective coping						
Low Type A behavior			n.s.	42 (42.0)	58 (58.0)	.024
High Type A behavior				**58 (58.0)**	42 (42.0)	
Low Negative affectivity	173 (58.8)	121 (41.2)	.000	81 (81.8)	18 (18.2)	.000
High Negative affectivity	176 (43.7)	**227 (56.3)**		19 (18.8)	**82 (81.2)**	
Low Social inhibition			n.s.	70 (70.0)	30 (30.0)	.015
High Social inhibition				30 (30.0)	**70 (70.0)**	
Low Intrinsic/extrinsic rewards			n.s.	31(31.0)	69 (69.0)	.018
High Intrinsic/extrinsic rewards				**69 (69.0)**	31 (31.0)	
Low Work demands	188 (53.9)	161(46.3)	.015	77 (77.0)	23 (23.0)	.001
High Work demands	161 (46.3)	**187 (53.7)**		23 (23.0)	**77 (77.0)**	
Low Work resources	155 (44.5)	193 (55.5)	.004	20 (20.0)	80 (80.0)	.000
High Work resources	**194 (55.6)**	155 (44.4)		**80 (80.0)**	20 (20.0)	
Low Job satisfaction			n.s.			n.s.
High Job satisfaction						
Low perceived work stress			n.s.			n.s.
High perceived work stress						

Association between General Health and significant independent variables (individual characteristics, work characteristics, appraisals)

All independent variables	Migrant workers			Italian workers		
	Good General Health N (%)	Poor General Health N (%)	*P*	Good General Health N (%)	Poor General Health N (%)	*P*
Low Emotional/Relational coping	199 (62.6)	119 (37.4)	.005			n.s.
High Emotional/Relational coping	**251 (69.5)**	110 (30.5)				
Low Objective coping	233 (69.8)	101 (30.2)	.009			n.s.
High Objective coping	**217 (62.9)**	128 (37.1)				
Low Type A behavior			n.s.	39 (39.0)	61 (61.0)	.006
High Type A behavior				23 (23.0)	**77 (77.0)**	
Low Negative affectivity			n.s.			n.s.
High Negative affectivity						
Low Social inhibition			n.s.			n.s.
High Social inhibition						
Low Intrinsic/extrinsic rewards	179 (60.9)	115 (39.1)	.003			n.s.
High Intrinsic/extrinsic rewards	**271 (70.4)**	114 (29.6)				
Low Work demands			n.s.			n.s.
High Work demands						
Low Work resources			n.s.			n.s.
High Work resources						
Low Job satisfaction	253 (63.3)	147 (36.8)	.000			n.s.
High Job satisfaction	**197 (70.6)**	82 (29.4)				
Low perceived work stress			n.s.	30 (30.0)	70 (70.0)	.003
High perceived work stress				20 (20.0)	**80 (80.0)**	

Logistic regression analyses

Multivariable associations of significant independent variables with Anxious-Depressive disorders (only the last step of the analyses is shown)

Variables	OR	CI
Migrant workers		
Work Demands		
Low	1.00	
High	2.446	1.386-4.319
Emotional Coping		
Low	1.00	
High	.666	.486-.911
Objective Coping		
Low	1.00	
High	.690	.504-.943
Social inhibition		
Low	1.00	
High	.701	.515-.953
Search Identity/Adoption of the host culture		
Low	1.00	
High	1.605	1.009-2.972
Perceived discrimination		
Low	1.00	
High	2.440	1.362-4.353
Italian workers		
Work demands		
Low	1.00	
High	1.817	1.340-2.465

Multivariable associations of significant independent variables with Relational disorders (only the last step of the analyses is shown)

Variables	OR	CI
Migrant workers		
Work Demands		
Low	1.00	
High	1.835	1.355-2.483
Resources		
Low	1.00	
High	.615	.453-.835
Negative affectivity		
Low	1.00	
High	1.801	1.324-2.451
Affirmation/Maintenance culture		
Low	1.00	
High	1.766	1.032-3.117
Perceived discrimination		
Low	1.00	
High	2.015	1.022-4.073
Italian workers		
Work demands		
Low	1.00	
High	1.998	1.028-4.011
Resources		
Low	1.00	
High	.236	.080-.698
Negative affectivity		
Low	1.00	
High	2.827	1.648-4.851

Multivariable associations of significant independent variables with General Health (only the last step of the analyses is shown)

Variables	OR	CI
Migrant workers		
Rewards		
Low	1.00	
High	.586	.420-.816
Emotional-Relational Coping		
Low	1.00	
High	.643	.460-.899
Objective Coping		
Low	1.00	
High	.740	500-.990
Total Job Satisfaction		
Low	1.00	
High	.725	.517-1.017
Affirmation/Maintenance culture		
Low	1.00	
High	.457	.277-.836
Search Identity/Adoption host culture		
Low	1.00	
High	.415	.253-.836
Perceived discrimination		
Low	1.00	
High	1.763	1.043-3.049
Italian workers		
Work Stress		
Low	1.00	
High	4.725	1.853-9.051
Type A behavior		
Low	1.00	
High	2.488	1.312-4.717

Appendix 7.2: Crosstabs and Chi-square analyses for Eastern European care workers, Chapter 7

Association between ANXIOUS-DEPRESSIVE DISORDERS and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Low Anxious-Depressive Disorders N (%)	High Anxious-Depressive Disorders N (%)	*P*
Low Work Demands	80 (65,0)	43 (35,0)	,000
High Work Demands	43 (34,7)	**81 (65,3)**	
Low Emotional-Relational Coping	51 (40,8)	74 (59,2)	,004
High Emotional-Relational Coping	**72 (59,0)**	50 (41,0)	
Low Type A Behaviour	71 (58,2)	51 (41,8)	,009
High Type A Behaviour	52 (41,6)	**73 (58,4)**	
Low Job Satisfaction	49 (39,5)	75(60,5)	,001
High Job Satisfaction	**74 (60,7)**	48 (39,3)	
Low Work Stress	76 (55,5)	61 (44,5)	,046
High Work Stress	47 (42,7)	**63 (57,3)**	
Low Search Identity/Adopt host culture	71 (58,2)	51 (41,8)	,009
High Search Identity/Adopt host culture	52 (41,6)	**73 (58,4)**	

Association between General Health and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Good General Health N (%)	Poor General Health N (%)	*P*
Low Work Demands	68 (64,8)	37 (35,2)	,000
High Work Demands	41 (33,9)	**80 (66,1)**	
Low Work Resources	44 (40,7)	64 (59,3)	,031
High Work Resources	**65 (55,1)**	53 (44,9)	
Low Emotional-Relational Coping	43 (39,8)	65 (60,2)	,026
High Emotional-Relational Coping	**66 (54,5)**	55 (45,5)	
Low Objective Coping	42 (36,5)	73 (63,5)	,001
High Objective Coping	**67 (58,8)**	47 (41,2)	
Low Type A Behaviour	69 (63,9)	39 (36,1)	,000
High Type A Behaviour	40 (33,1)	**81 (66,9)**	
Low Total Job Satisfaction	34 (32,4)	71 (67,6)	,000
High Total Job Satisfaction	**74 (60,2)**	49 (39,8)	
Low Affirmation/Maintenance Culture	42 (40,4)	62 (59,6)	,046
High Affirmation/Maintenance Culture	**67 (53,6)**	58 (46,4)	

Association between RELATIONAL DISORDERS and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Low Relational Disorders N (%)	High Relational Disorders N (%)	P
Low Work Demands	72 (58,5)	51 (41,5)	,006
High Work Demands	51 (41,1)	**73 (58,9)**	
Low Type A Behavior	69 (56,6)	53 (43,4)	,048
High Type A Behavior	55 (44,0)	**70 (56,0)**	
Low Negative Affectivity	82 (59,9)	55 (40,1)	,001
High Negative Affectivity	42 (38,2)	**68 (61,8)**	
Low Job Satisfaction	54 (44,3)	68 (55,7)	,041
High Job Satisfaction	**70 (56,5)**	54(43,5)	

Appendix 7.3: Crosstabs and Chi-square analyses for Moroccan Factory workers, Chapter 7

Association between ANXIOUS-DEPRESSIVE DISORDERS and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Low Anxious-Depressive Disorders N (%)	High Anxious-Depressive Disorders N (%)	P
Low Rewards	55 (44)	70 (56)	,048
High Rewards	**70 (56)**	55 (44)	
Low Negative Affectivity	51 (58)	37 (42,0)	,044
High Negative Affectivity	74 (45,7)	**88 (54,3)**	
Low Social Inhibition	34 (38,2)	55 (61,8)	,006
High Social Inhibition	**91 (56,5)**	70 (43,5)	

Association between General Health and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Good General Health N (%)	Poor General Health N (%)	P
Low Rewards	82 (65,6)	43 (34,4)	,024
High Rewards	**98 (78,4)**	27 (21,6)	
Low Emotional-Relational Coping	72 (58,1)	52 (41,9)	,000
High Emotional-Relational Coping	**108 (85,7)**	18 (14,3)	
Low Type A	96 (76,8)	29 (23,2)	,041
High Type A	**84 (67,2)**	41 (32,8)	
Low Job Satisfaction	93 (80,9)	22 (19,1)	,004
High Job Satisfaction	**87 (64,4)**	48 (35,6)	
Low Work Stress	96 (80,0)	24 (20,0)	,007
High Work Stress	84 (64,6)	**46 (35,4)**	
Low Search Identity/Adopt host Culture	98 (79,0)	26 (21,0)	,014
High Search Identity/Adopt host Culture	**82 (65,1)**	44 (34,9)	

Association between RELATIONAL DISORDERS and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Low Relational Disorders N (%)	High Relational Disorders N (%)	P
Low Rewards	49 (39,2)	76 (60,8)	,001
High Rewards	**76 (60,8)**	49 (39,2)	
Low Work Resources	52 (41,3)	74 (58,7)	,005
High Work Resources	**73 (58,9)**	51 (41,1)	
Low Type A Behavior	50 (40,0)	75 (60,0)	,002
High Type A Behavior	**75 (60,0)**	50 (40,0)	
Low Search Identity/Adopt host culture	71 (57,3)	53 (42,7)	,023
High Search Identity/Adopt host culture	54 (42,9)	**72 (57,1)**	
Low Perceived Discrimination	59 (60,8)	38 (39,2)	,006
High Perceived Discrimination	66(43,1)	**87 (56,9)**	

Appendix 7.4: Crosstabs and Chi-square analyses for Ghanaian masons, Chapter 7

Association between ANXIOUS-DEPRESSIVE DISORDERS and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Low Anxious-Depressive Disorders N (%)	High Anxious-Depressive Disorders N (%)	P
Low Emotional-Relational Coping	62(56,9)	47 (43,1)	,033
High Emotional-Relational Coping	38 (41,8)	**53 (58,2)**	
Low Objective Coping	42(42,0)	58 (58,0)	,024
High Objective Coping	**58 (58,0)**	42 (42,0)	
Low Job Satisfaction	44 (44,0)	56 (56,0)	,040
High Job Satisfaction	**56 (56,0)**	44 (44,0)	
Low Perceived Discrimination	52 (65,0)	28 (35,0)	,001
High Perceived Discrimination	**48 (40,0)**	72 (60,0)	

Association between General Health and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Good General Health N (%)	Poor General Health N (%)	P
Low Type A Behaviour	78 (75,7)	25 (24,3)	,039
High Type A Behaviour	**83 (85,6)**	14 (14,4)	
Low Search Identity/Adopt host culture	77 (72,6)	29 (27,4)	,003
High Search Identity/Adopt host culture	**84 (89,4)**	10 (10,6)	
Low Social Inhibition	102 (88,7)	13 (11,3)	,001
High Social Inhibition	**59 (69,4)**	26 (30,6)	

Association between RELATIONAL DISORDERS and significant independent variables (Coping styles, Work characteristics, Type A, Type D, Ethnicity dimensions, Work Stress, Job satisfaction)

Independent Variables	Low Relational Disorders N (%)	High Relational Disorders N (%)	*P*
Low Work Demands	56 (56)	44 (44)	,040
High Work Demands	44 (44)	**56 (56)**	
Low Negative Affectivity	46 (66,7)	23 (33,3)	,001
High Negative Affectivity	54 (41,2)	**77 (58,8)**	
Low Social Inhibition	51 (44,3)	64 (55,7)	,033
High Social Inhibition	**49 (57,6)**	36 (42,4)	
Low Search Identity/Adopt host culture	47 (44,3)	59 (55,7)	,039
High Search Identity/Adopt host culture	**53 (56,4)**	41 (43,6)	

Appendix 8.1: Work characteristics, Individual differences, Appraisals and cultural dimensions in the prediction of Health outcomes, Chapter 8 (Meta-analysis)

Work characteristics, Individual differences, Appraisals and cultural dimensions in the prediction of Anxious-Depressive disorders

Figure 1: Work demands on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,954	1,113	3,429	2,334	0,020	
Italian masons	1,120	0,677	1,854	0,441	0,659	
Eastern European eldercare workers	4,006	2,254	7,118	4,731	0,000	
Moroccan factory workers	1,140	0,656	1,982	0,465	0,642	
Ghanaian masons	1,525	0,828	2,808	1,355	0,175	
	1,678	1,308	2,153	4,068	0,000	

Meta Analysis

Figure 2: Rewards on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,128	0,056	0,248	-6,079	0,000	
Italian masons	0,357	0,175	0,727	-2,837	0,005	
Eastern European eldercare workers	0,920	0,482	1,756	-0,253	0,800	
Moroccan factory workers	0,339	0,172	0,668	-3,129	0,002	
Ghanaian masons	0,753	0,404	1,404	-0,893	0,372	
	0,416	0,309	0,559	-5,805	0,000	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 3: Work resources on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,821	0,291	2,319	-0,372	0,710	
Italian masons	0,988	0,369	2,647	-0,024	0,981	
Eastern European eldercare workers	0,870	0,315	2,405	-0,268	0,788	
Moroccan factory workers	0,916	0,333	2,517	-0,170	0,865	
Ghanaian masons	0,781	0,217	2,813	-0,378	0,705	
	0,882	0,551	1,412	-0,523	0,601	

0,01 0,1 1 10 100

Favours A   Favours B

Meta Analysis

Figure 4: Emotional coping on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,766	0,383	1,532	-0,754	0,451	
Italian masons	0,466	0,217	1,001	-1,957	0,050	
Eastern European eldercare workers	0,782	0,391	1,562	-0,696	0,486	
Moroccan factory workers	0,857	0,454	1,616	-0,477	0,634	
Ghanaian masons	0,973	0,490	1,933	-0,078	0,938	
	0,765	0,561	1,041	-1,704	0,088	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 5: Objective coping on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,815	0,405	1,638	-0,574	0,566	
Italian masons	0,918	0,467	1,805	-0,248	0,804	
Eastern European eldercare workers	0,739	0,396	1,381	-0,949	0,343	
Moroccan factory workers	0,801	0,401	1,599	-0,629	0,529	
Ghanaian masons	0,426	0,215	0,844	-2,444	0,015	
	0,717	0,531	0,969	-2,165	0,030	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 6: Type A behavior on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,341	0,681	2,642	0,848	0,397	
Italian masons	1,290	0,736	2,262	0,888	0,374	
Eastern European eldercare workers	2,586	1,418	4,716	3,100	0,002	
Moroccan factory workers	1,263	0,723	2,205	0,821	0,412	
Ghanaian masons	1,112	0,569	2,174	0,310	0,756	
	1,453	1,107	1,906	2,696	0,007	

0,01 0,1 1 10 100

Favours A   Favours B

Meta Analysis

Figure 7: Negative affectivity on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,371	0,845	2,224	1,278	0,201	
Italian masons	1,957	1,120	3,419	2,359	0,018	
Eastern European eldercare workers	2,386	1,370	4,156	3,072	0,002	
Moroccan factory workers	1,961	1,115	3,448	2,338	0,019	
Ghanaian masons	1,353	0,683	2,680	0,867	0,386	
	1,764	1,374	2,265	4,453	0,000	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 8: Social inhibition on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,318	0,694	2,502	0,844	0,398	
Italian masons	1,265	0,655	2,443	0,700	0,484	
Eastern European eldercare workers	1,342	0,695	2,590	0,877	0,381	
Moroccan factory workers	0,343	0,192	0,613	-3,613	0,000	
Ghanaian masons	1,277	0,673	2,422	0,749	0,454	
	0,947	0,713	1,257	-0,380	0,704	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 9: Perceived job stress on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,282	0,650	2,528	0,717	0,473	
Italian masons	1,188	0,604	2,335	0,500	0,617	
Eastern European eldercare workers	1,498	0,816	2,751	1,304	0,192	
Moroccan factory workers	1,519	0,836	2,760	1,372	0,170	
Ghanaian masons	1,349	0,676	2,692	0,849	0,396	
	1,375	1,030	1,836	2,159	0,031	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 10: Perceived job satisfaction on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,528	0,279	1,000	-1,961	0,050	
Italian masons	0,740	0,385	1,422	-0,903	0,366	
Eastern European eldercare workers	0,527	0,303	0,916	-2,270	0,023	
Moroccan factory workers	0,804	0,403	1,606	-0,618	0,537	
Ghanaian masons	0,974	0,483	1,962	-0,074	0,941	
	0,670	0,503	0,893	-2,737	0,006	

Meta Analysis

Figure 11: Perceived racial discrimination on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Moroccan factory workers	1,140	0,656	1,982	0,465	0,642	
Ghanaian masons	3,796	1,983	7,268	4,025	0,000	
	1,890	1,240	2,879	2,963	0,003	

0,01 0,1 1 10 100

Favours A   Favours B

Meta Analysis

Figure 12: Affirmation-maintenance culture on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Eastern European eldercare workers	0,885	0,560	1,400	-0,522	0,601	
Moroccan factory workers	0,773	0,429	1,393	-0,857	0,391	
Ghanaian masons	1,188	0,626	2,255	0,527	0,598	
	0,914	0,667	1,253	-0,558	0,577	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 13: Search identity-adoption of the host culture on Anxious-depressive disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Eastern European eldercare workers	1,137	0,711	1,819	0,535	0,592	
Moroccan factory workers	1,156	0,581	2,300	0,413	0,680	
Ghanaian masons	0,695	0,353	1,369	-1,052	0,293	
	1,011	0,722	1,416	0,063	0,950	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Work characteristics, Individual differences, Appraisals and cultural dimensions in the prediction of Relational disorders

Figure 14: Work demands on Relational disorders

Meta Analysis

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	Odds ratio and 95% CI
Italian factory workers	1,872	1,110	3,158	2,350	0,019	
Italian masons	1,971	1,014	3,829	2,002	0,045	
Eastern European eldercare workers	5,328	2,740	10,361	4,930	0,000	
Moroccan factory workers	1,061	0,593	1,898	0,200	0,842	
Ghanaian masons	1,897	1,045	3,445	2,103	0,035	
	1,988	1,521	2,598	5,031	0,000	

0,01　0,1　1　10　100

Favours A　　　Favours B

Meta Analysis

Figure 15: Rewards on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,841	0,412	1,717	-0,476	0,634	
Italian masons	0,458	0,231	0,907	-2,238	0,025	
Eastern European eldercare workers	0,816	0,400	1,663	-0,560	0,576	
Moroccan factory workers	0,361	0,210	0,621	-3,678	0,000	
Ghanaian masons	0,931	0,491	1,766	-0,219	0,827	
	0,602	0,451	0,804	-3,432	0,001	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 16: Work resources on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,352	0,174	0,711	-2,913	0,004	
Italian masons	0,766	0,406	1,444	-0,824	0,410	
Eastern European eldercare workers	0,885	0,453	1,730	-0,357	0,721	
Moroccan factory workers	0,840	0,419	1,685	-0,491	0,623	
Ghanaian masons	0,963	0,515	1,801	-0,118	0,906	
	0,734	0,546	0,988	-2,040	0,041	

Meta Analysis

Figure 17: Emotional coping on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,741	0,381	1,441	-0,883	0,377	
Italian masons	0,823	0,418	1,621	-0,564	0,573	
Eastern European eldercare workers	0,403	0,221	0,736	-2,958	0,003	
Moroccan factory workers	0,921	0,476	1,781	-0,245	0,807	
Ghanaian masons	0,802	0,405	1,590	-0,632	0,527	
	0,693	0,517	0,929	-2,453	0,014	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 18: Objective coping on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,851	0,431	1,682	-0,464	0,642	
Italian masons	0,799	0,390	1,637	-0,613	0,540	
Eastern European eldercare workers	0,752	0,382	1,481	-0,825	0,410	
Moroccan factory workers	0,703	0,352	1,404	-0,998	0,318	
Ghanaian masons	0,934	0,468	1,865	-0,194	0,847	
	0,804	0,590	1,095	-1,384	0,166	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 19: Type A behavior on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,145	0,577	2,272	0,387	0,698	
Italian masons	2,156	1,084	4,286	2,191	0,028	
Eastern European eldercare workers	2,747	1,393	5,417	2,917	0,004	
Moroccan factory workers	0,437	0,255	0,749	-3,008	0,003	
Ghanaian masons	1,385	0,697	2,752	0,930	0,353	
	1,177	0,882	1,572	1,105	0,269	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 20: Negative affectivity on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,962	1,035	3,718	2,066	0,039	
Italian masons	1,341	0,691	2,602	0,867	0,386	
Eastern European eldercare workers	1,415	0,706	2,837	0,978	0,328	
Moroccan factory workers	1,059	0,577	1,942	0,185	0,853	
Ghanaian masons	3,317	1,756	6,266	3,695	0,000	
	1,671	1,252	2,231	3,485	0,000	

Meta Analysis

Figure 21: Social inhibition on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,426	0,726	2,802	1,030	0,303	
Italian masons	1,382	0,713	2,679	0,958	0,338	
Eastern European eldercare workers	1,548	0,842	2,844	1,408	0,159	
Moroccan factory workers	0,904	0,470	1,738	-0,303	0,762	
Ghanaian masons	0,897	0,445	1,806	-0,304	0,761	
	1,214	0,904	1,629	1,291	0,197	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

322

Figure 22: Perceived job stress on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,235	0,614	2,485	0,592	0,554	
Italian masons	1,997	1,014	3,934	2,000	0,046	
Eastern European eldercare workers	1,181	0,610	2,287	0,493	0,622	
Moroccan factory workers	1,261	0,633	2,511	0,660	0,509	
Ghanaian masons	1,282	0,647	2,542	0,711	0,477	
	1,364	1,005	1,850	1,994	0,046	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 23: Perceived job satisfaction on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,852	0,416	1,744	-0,438	0,661	
Italian masons	0,907	0,455	1,808	-0,277	0,781	
Eastern European eldercare workers	0,427	0,211	0,864	-2,368	0,018	
Moroccan factory workers	0,943	0,491	1,811	-0,176	0,860	
Ghanaian masons	0,840	0,413	1,710	-0,481	0,631	
	0,770	0,565	1,050	-1,651	0,099	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 24: Perceived racial discrimination on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Moroccan factory workers	2,181	1,152	4,130	2,394	0,017	
Ghanaian masons	1,846	0,934	3,649	1,763	0,078	
	2,017	1,266	3,215	2,952	0,003	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 25: Affirmation-Maintenance culture on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Eastern European eldercare workers	0,737	0,452	1,202	-1,222	0,222	
Moroccan factory workers	0,537	0,264	1,091	-1,719	0,086	
Ghanaian masons	0,774	0,379	1,581	-0,703	0,482	
	0,690	0,486	0,980	-2,072	0,038	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 26: Search identity-adoption of the host culture on Relational disorders

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Eastern European eldercare workers	1,456	0,921	2,302	1,608	0,108	
Moroccan factory workers	1,786	1,043	3,058	2,114	0,035	
Ghanaian masons	0,483	0,264	0,883	-2,363	0,018	
	1,178	0,871	1,594	1,065	0,287	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Work characteristics, Individual differences, Appraisals and cultural dimensions in the prediction of General health

Figure 27: Work demands on General health

Meta Analysis

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Italian factory workers	1,384	0,734	2,609	1,004	0,315
Italian masons	2,111	1,076	4,142	2,172	0,030
Eastern European eldercare workers	2,001	1,020	3,925	2,018	0,044
Moroccan factory workers	1,525	0,715	3,252	1,092	0,275
Ghanaian masons	1,625	0,716	3,690	1,160	0,246
	1,711	1,250	2,343	3,350	0,001

Odds ratio and 95% CI

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 28: Rewards on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,694	0,353	1,363	-1,061	0,289	
Italian masons	0,734	0,377	1,428	-0,911	0,362	
Eastern European eldercare workers	0,751	0,380	1,483	-0,825	0,410	
Moroccan factory workers	0,406	0,212	0,778	-2,718	0,007	
Ghanaian masons	0,818	0,401	1,668	-0,552	0,581	
	0,654	0,484	0,885	-2,753	0,006	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 29: Work resources on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,782	0,386	1,586	-0,682	0,495	
Italian masons	0,700	0,351	1,395	-1,014	0,311	
Eastern European eldercare workers	0,858	0,433	1,699	-0,439	0,660	
Moroccan factory workers	0,558	0,269	1,158	-1,567	0,117	
Ghanaian masons	0,337	0,148	0,768	-2,589	0,010	
	0,641	0,464	0,885	-2,701	0,007	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

330

Figure 30: Emotional coping on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,721	0,361	1,440	-0,927	0,354	
Italian masons	0,520	0,238	1,137	-1,638	0,101	
Eastern European eldercare workers	0,640	0,320	1,281	-1,261	0,207	
Moroccan factory workers	0,288	0,130	0,638	-3,067	0,002	
Ghanaian masons	0,957	0,512	1,790	-0,138	0,891	
	0,619	0,451	0,851	-2,959	0,003	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 31: Objective coping on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,791	0,391	1,601	-0,652	0,514	
Italian masons	0,857	0,451	1,630	-0,470	0,638	
Eastern European eldercare workers	0,297	0,158	0,559	-3,761	0,000	
Moroccan factory workers	0,564	0,298	1,069	-1,756	0,079	
Ghanaian masons	1,184	0,631	2,222	0,526	0,599	
	0,665	0,498	0,889	-2,758	0,006	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 32: Type A behavior on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	2,176	1,167	4,058	2,445	0,014	
Italian masons	2,156	1,095	4,247	2,221	0,026	
Eastern European eldercare workers	3,141	1,585	6,223	3,281	0,001	
Moroccan factory workers	1,084	0,589	1,996	0,259	0,796	
Ghanaian masons	0,319	0,139	0,731	-2,703	0,007	
	1,528	1,131	2,065	2,759	0,006	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 33: Negative affectivity on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,591	0,801	3,159	1,327	0,184	
Italian masons	1,188	0,593	2,378	0,486	0,627	
Eastern European eldercare workers	0,955	0,467	1,953	-0,126	0,900	
Moroccan factory workers	0,914	0,458	1,825	-0,255	0,799	
Ghanaian masons	1,357	0,704	2,615	0,912	0,362	
	1,183	0,870	1,609	1,071	0,284	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 34: Social inhibition on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,449	0,728	2,882	1,057	0,291	
Italian masons	1,291	0,658	2,534	0,743	0,458	
Eastern European eldercare workers	1,518	0,754	3,054	1,170	0,242	
Moroccan factory workers	0,668	0,336	1,329	-1,149	0,251	
Ghanaian masons	1,621	0,831	3,163	1,417	0,157	
	1,255	0,924	1,703	1,455	0,146	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 35: Perceived job stress on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	1,952	0,989	3,853	1,928	0,054	
Italian masons	1,221	0,636	2,345	0,600	0,549	
Eastern European eldercare workers	1,334	0,651	2,734	0,787	0,431	
Moroccan factory workers	2,241	1,169	4,296	2,431	0,015	
Ghanaian masons	1,149	0,622	2,122	0,444	0,657	
	1,513	1,126	2,033	2,749	0,006	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 36: Perceived job satisfaction on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Italian factory workers	0,961	0,474	1,949	-0,110	0,912	
Italian masons	0,793	0,379	1,660	-0,615	0,538	
Eastern European eldercare workers	0,856	0,414	1,770	-0,419	0,675	
Moroccan factory workers	0,306	0,158	0,593	-3,510	0,000	
Ghanaian masons	0,974	0,483	1,962	-0,074	0,941	
	0,702	0,512	0,962	-2,201	0,028	

0,01 0,1 1 10 100

Favours A   Favours B

Meta Analysis

Figure 37: Perceived racial discrimination on General health

Meta Analysis

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Moroccan factory workers	1,245	0,621	2,496	0,618	0,537	
Ghanaian masons	1,217	0,609	2,430	0,557	0,578	
	1,231	0,754	2,010	0,830	0,406	

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis

Figure 38: Affirmation-Maintenance culture on General health

Meta Analysis

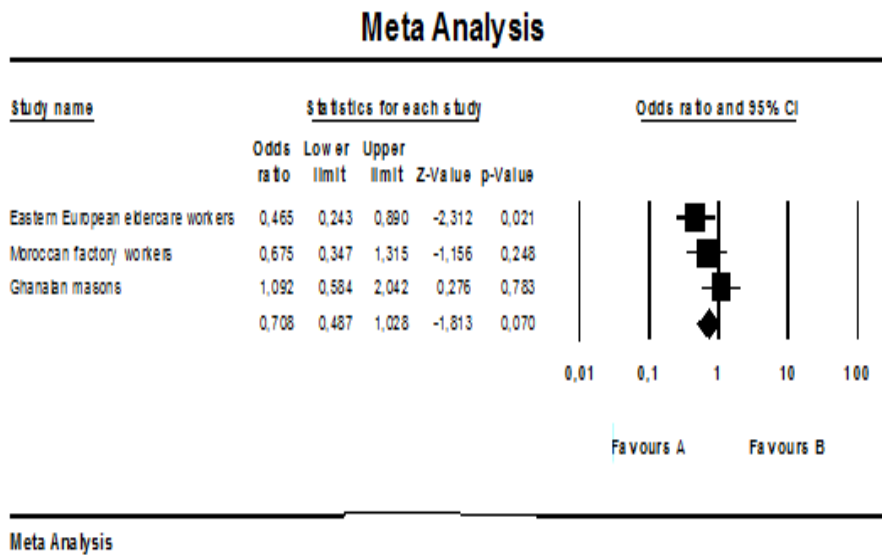| Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Eastern European eldercare workers	0,465	0,243	0,890	-2,312	0,021	
Moroccan factory workers	0,675	0,347	1,315	-1,156	0,248	
Ghanaian masons	1,092	0,584	2,042	0,276	0,783	
	0,708	0,487	1,028	-1,813	0,070	

Meta Analysis

Figure 39: Search identity-adoption of the host culture on General health

Meta Analysis

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Eastern European eldercare workers	1,373	0,713	2,645	0,948	0,343
Moroccan factory workers	1,251	0,652	2,402	0,673	0,501
Ghanaian masons	0,227	0,097	0,533	-3,404	0,001
	0,880	0,586	1,322	-0,614	0,539

Odds ratio and 95% CI

0,01   0,1   1   10   100

Favours A   Favours B

Meta Analysis