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The effects of unemployment on mental health

AND THE INFLUENCE OF MINORITY GROUP MEMBERSHIP AND AGE

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Abstract

Unemployment is a social problem which has far reaching consequences, including personal and social costs such as severe financial hardship and poverty, debt, homelessness and housing stress, family tensions and breakdown, boredom, alienation, shame and stigma, increased social isolation, crime, erosion of confidence and self-esteem, the atrophying of work skills and ill-health. This paper investigates the effect of unemployment on self-assessed mental health, and the influence of age and minority group membership, by running (non)linear regressions using both cross-sectional and longitudinal data of the LISS (Longitudinal Internet studies for the Social Sciences) panel. The cross-sectional results indicate that unemployment and lower mental health scores correlate, but longitudinal analysis shows that they do not necessarily have a causal relationship. The cross-sectional results show that there is no difference in the negative effects of unemployment between migrants and natives. The longitudinal results indicate that there is, as second-generation migrants suffer more from the negative effects of unemployment on their mental health. This is possibly because first generation migrants are buffered by the healthy migrant effect, while second generation migrants are hampered in their acculturation. The cross-sectional results for age indicate that there is no influence of age on the effect of unemployment on mental health, while the longitudinal results do show an effect. Younger people suffer less from the negative effects of unemployment than older people, possibly due to their smaller (financial) responsibilities. These differences between the cross-sectional and longitudinal and analyses underline the importance of more longitudinal research, as cross-sectional research design might suffer from reversed causality and the results between cross-sectional and longitudinal designs seem to differ.

Keywords: Unemployment; mental health; first generation migrant; second-generation migrant; minority; age; cross-section; longitudinal; MHI-5; LISS panel

Introduction

Unemployment is a social problem which has far reaching consequences (McClelland & Macdonald, 1998). The personal and social costs of unemployment include severe financial hardship and poverty, debt, homelessness and housing stress, family tensions and breakdown, boredom, alienation, shame and stigma, increased social isolation, crime, erosion of confidence and self-esteem, the atrophying of work skills and ill-health (McClelland & Macdonald, 1998). When looking at the Dutch employment statistics it becomes obvious that certain groups of people are most vulnerable to being unemployed. Even though the unemployment in The Netherlands has been decreasing since the summer of 2020, the total unemployment is 4.0%, still higher than it was before the start of the COVID-19 crisis (Centraal Bureau voor de Statistiek [CBS], 2021b). Youth unemployment saw the sharpest rise, 9.4% of people aged between 15 and 25 were unemployed, almost double the percentage of the total unemployment (CBS, 2021d). Also, people with a migration background are very vulnerable. Where the unemployment rate among native Dutch is 3.1%, the unemployment among migrants of non-western origin is 8.7% (CBS, 2021c). These statistics indicate that certain age groups and certain ethnic demographics are more often affected by unemployment.

There is a large body of research which indicates that unemployment negatively affects mental health directly (Artazcoz et al., 2004; Ezzy, 1993; Paul & Moser, 2009; Murphy & Athanasou, 1999; Warr, 1988;). Interestingly, there is a strong indication that unemployment is not only correlated to distress but also causes it. Several authors came to this conclusion analysing longitudinal datasets and executing literature reviews (Ezzy, 1993; Feather, 1990; Paul & Moser, 2009; Winkelmann & Winkelmann, 1998). Besides this direct effect, there also seems to be an indirect negative effect, which can be attributed to the absence of benefits provided by employment, such as self-esteem, physical and mental activity, time structure, social status, and the use of one's skills (Bartley, 1994; Wanberg et al., 1997).

While some debate over the strength of these effects on the relationship between unemployment and mental health remain, in most studies the general direction of the effect is quite clear. Nonetheless, clarifying the many (in)direct relationships is still a work in progress (Ezzy, 1993). This is made more difficult by the fact that the field of research does not lend itself for true experimental designs, research depends on sophisticated multivariate data analyses (Dooley, 2003). Furthermore, the research field of the effects of unemployment on

mental health attracts attention from a wide variety of researchers, which employ an equally wide variety of theoretical frameworks to explain the prevalent relationships (Ezzy, 1993).

Many psychologists and sociologists view job loss as an event that might trigger adverse emotional and behavioural reaction, which is consistent with both intuition and psychological models (Ezzy, 1993; Paul & Moser, 2009). Their most common approaches follow stress and coping theories and treat unemployment as an undesirable life event challenging the individual's adaptive capacity (Ezzy, 1993; Paul & Moser, 2009). These paradigms can also be used to explain how different personal characteristics, such as age and being part of a minority group, might influence the relationship between unemployment and different personal characteristics (Jahoda, 1981; Warr, 1987). Furthermore, recent empirical research shows that the effect of unemployment on mental health varies considerably depending on many individual characteristics **s**uch as the persons' age, gender, social support, income, job satisfaction, expectation of finding new work and the length of their unemployment (Beland et al., 2002; Giatti et al., 2010; Murphy & Athanasou, 1999). Even though the effect of personal characteristics on the relation between unemployment and mental health have been studied extensively, there is no concise conclusion on which age group is most severely affected (Paul & Moser, 2009). Furthermore, some social contexts (such as being part of a minority group) have not been investigated extensively at all (Paul & Moser, 2009).

There is reason to believe that the negative effect of unemployment on mental health might be more severe for middle aged men than it is for young adults (Warr, 1987), as it results in greater negative effects on their availability of money, security, opportunities for personal contact and valued social position. This is because middle aged men are more dependent on work to acquire these specific attributes, called 'vitamins' by Warr (1987). In contrast, Erikson (1968) argues that the consequences of unemployment are highest for young people, as they are in a developmental phase which is accompanied by more psychological and social stress. Furthermore, finding a job is a crucial part of the identity formation of adolescents (Luyckx et al., 2008), thus making young adults more vulnerable to the negative effects of unemployment.

There is also reason to believe that being part of a minority group increases the negative effect of unemployment on mental health, compared to the majority. This is due to the increased sense of rejection that one perceives when losing their job (Donovan & Oddy, 1982), and the effect this has on acculturation strategies. It could cause members of the minority group to adopt the acculturation strategy of marginalization or separation, which are

less effective and cause more acculturative problems which cause stress (Berry, 1990). This effect could be negated for first generation non-western migrants by the healthy migrant effect, which selects healthy individuals for migration. These individuals are more capable of adapting to new situations and environments (Palloni & Morenoff, 2001), thus making them more resilient to the negative effects of unemployment on mental health. This paper is aimed at figuring out how unemployment affects mental health and to which extent this effect changes for different age groups and minority groups. The question that must be answered is threefold:

How does unemployment affect the self-assessed mental health of inhabitants of The Netherlands and how does minority group membership and age influence this effect?

Theory

The psychological impact of unemployment has been studied since the turn of the 20th century (Feather, 2018). The Great Depression studies at Marienthal by Jahoda and colleagues (1933) are a prime example of this. These early studies laid the foundation for subsequent research throughout the world, from which the stage theory, deprivation theory, agency theory and vitamin theory emerged. Because of this there is a rich foundation of studies investigating the effect of unemployment on mental health (Farré et al., 2018; Jin et al., 1995; Murphy & Athanasou, 1999).

Jahoda's functional model

As outlined in the introduction, there are several theories which can be used to explain the negative effect of unemployment on mental health. Jahoda's functional model can be used to both explain how unemployment in general negatively influences mental health, and how being part of a minority group influences the relationship between unemployment and mental health.

Unemployment

Jahoda differentiates between manifest and latent functions of employment. The manifest functions of employment are usually taken for granted, it consists of the financial gains, which enable an individual to earn a livelihood. Apart from this manifest function, Jahoda argues that people also gain five latent by-products. These consist of the time-structure which employment imposes on the working day, the association- and sharing of experiences with people outside of the family, the linking of the individual to common -self-transcending-

goals which transcend the individual, the defining aspects to personal status and identity which employment offers and the activity which employment enforces (Jahoda, 1981, p. 188). Jahoda argues that these latent consequences explain the motivation to work and explain why employment has a positive effect on mental health, even if the job itself is detrimental (Jahoda, 1981, p. 188). As the negative effects of unemployment also occur when people are financially secure, it is not just economic deprivation which causes mental health issues. Jahoda states that leisure activities cannot provide similar benefits as employment, as both the manifest and most of the latent functions of work are missing (Jahoda, 1981, p. 189). Finally, she claims that people who have lost their job in the past experience negative consequences from the abrupt exclusion from a social institution which previously dominated their lives (Jahoda, 1981, p. 171).

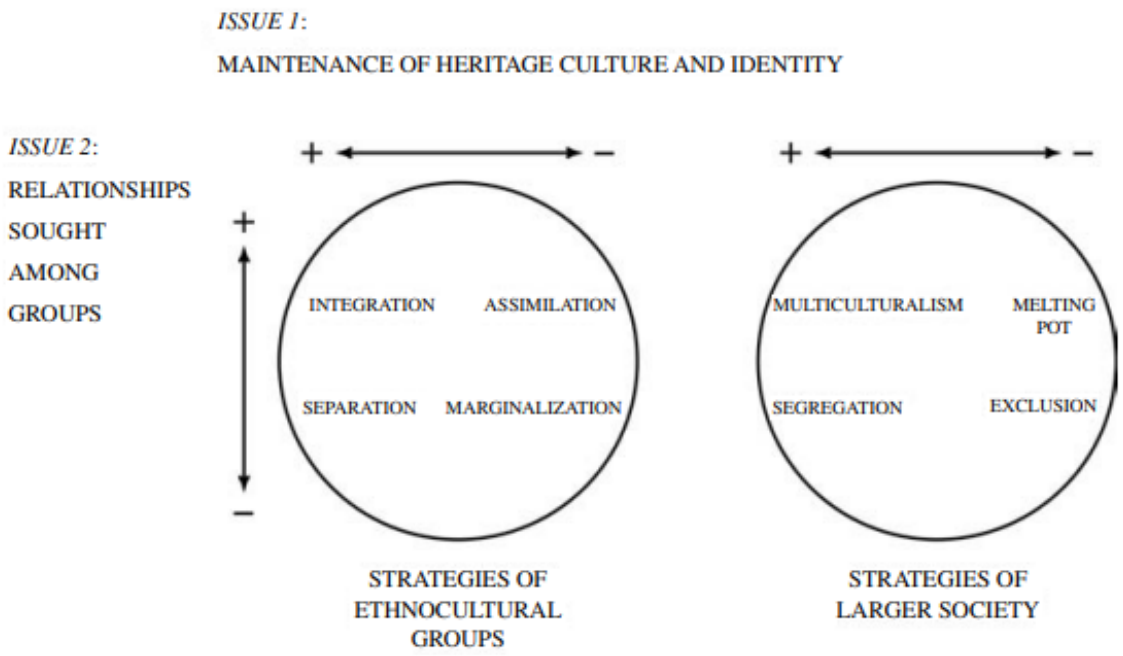
From this perspective, it is hypothesized that unemployment has a negative effect on self-assessed mental health due to an abrupt exclusion from a social institution which previously dominated life.

Minority group membership

In order to understand how this is likely to affect members of a minority group even more, it is important to understand how minorities use acculturation strategies to integrate into a society. These strategies consist of two components, namely how much the minority group tries to maintain their heritage culture and identity and how many relationships are sought between the minority and majority group. The combination of these two components can lead to four different integration outcomes, namely integration, assimilation, separation, and marginalization as is visualized in Figure 1 (Berry, 2006). When individuals seek interaction with the majority, and do not wish to maintain their own culture, the acculturation strategy is defined as assimilation. In contrast, when individuals seek interaction with the majority but wish to maintain their own culture, the strategy is defined as integration. When individuals do not wish to interact with the majority and want to maintain their own culture, the separation alternative is defined. Finally, when there is no interest in interaction with the majority and no interest in maintaining their own culture, marginalization is defined.

Figure 1

Cultural conservation and majority group interaction in acculturation



Note: Taken from "Stress perspectives on acculturation." by Berry, J. W., 2006, *The Cambridge handbook of acculturation psychology*, 43-56.

Of these strategies, integration is usually the most successful and causes the least stress, while marginalization is the least successful and causes the most stress, and assimilation and separation strategies are intermediate. This pattern has been found in numerous studies and is present for all types of acculturating groups (Berry, 1990; Berry & Sam, 1997; Berry et al., 2006). Furthermore, Curran (2003) found that the integration strategy was most beneficial to mental health.

In groups experiencing acculturation, unemployment could be an added risk factor, as losing one's job increases the sense of rejection people experience (Donovan & Oddy, 1982). This can be explained by the loss of two specific latent functions, the functions of regularly shared experiences and contacts with people outside the nuclear family and a link to goals and purposes that transcend the goals of the individual (Jahoda, 1981, p. 188). This sense of rejection could cause members of a minority group to turn towards acculturation strategies of separation or marginalization, depending on whether they maintain or discard their own heritage and culture. These acculturation strategies are less effective and cause more acculturative problems which cause stress, further compounding the negative effects already present when losing one's job. Furthermore, this stronger negative effect of unemployment on mental health might be compounded by the fact that non-western migrants are susceptible to

somatic fixation, where patients inadequately respond to their illnesses and struggle more than native Dutch (De Bruyn, 1989), thus increasing health problems associated with unemployment. A recent meta-analysis tested whether minority groups experienced stronger negative effects of unemployment on mental health but found only a weak trend (Paul & Moser, 2009). The researchers stated that this analysis was hampered by a comparatively small number of primary studies. Research among Australian migrants found that the combined stress of migration and periods of unemployment do negatively affect the mental health of immigrants. Especially, long durations of unemployment were found to be associated with poorer mental health (Kennedy & McDonald, 2006). Research among skilled immigrants in Ontario, Canada revealed that the participants most frequently reported mental health issues due to a lack of income and loss of social status (Dean & Wilson, 2009).

Contrasting this risk factor for migrants is the 'healthy migrant effect', a well-established theoretical framework which explains how the selection effect of migration causes migrants to have a better health status compared to noy only others in the home country, but also compared to the population in the host country (Palloni & Morenoff, 2001). Several studies have found outcomes which indicate that such an effect exists (Anson, 2004; Feranil, 2005; Marmot et al., 1984a; Marmot et al., 1984b; Palloni & Morenoff, 2001). As migration usually involves the stress of disruption of one's life and the stress of adaptation to a new culture, the people who decide to migrate are often individuals which demonstrate personal characteristics that foster their ability to handle change and adapt to new environments. This has been demonstrated in both the internal and international migration literature (De Jong et al., 1983; Massey, 1988). Although this healthy migrant effect does deteriorate over time (Anson, 2004; Feranil, 2005), the effect might make first generation migrants more resilient to the negative effects of unemployment on mental health.

Given how unemployment can lead to loss of regularly shared experiences and contacts with people outside the nuclear family, and thus to less successful acculturation strategies for minority group members, the hypothesis is that the negative effect of unemployment on the self-assessed mental health of minority group members is stronger than the same effect for members of the dominant group in society. The exception are members of the minority group which are first generation non-western migrants, their increased coping resources due to positive self-selection before migration should buffer this effect.

Thus, the hypothesis is that the negative effect of unemployment on the self-assessed mental health of minority group members is stronger than the same effect for members of the dominant group in society, except for first-generation minority group members as they have more coping resources.

Vitamin model

While the effect of age on the negative effect of unemployment on mental health is not linked strictly to a particular model, the Vitamin approach is most specific in how age affects this relationship. Warr (1987) suggests that a variety of contextual factors influence mental health and identifies nine of these factors in total. Drawing from medicinal terminology, he calls these factors 'Vitamins'. The factors are as follows; opportunity for control, opportunity for skill use, externally generated goals, variety, environmental clarity, availability of money, physical security, opportunity for interpersonal contact, and valued social position. The underlying assumption of this model is that when people experience low levels of 'vitamins', they will suffer from lowered levels of mental health. The model is environmentally centered, in that it focuses on the context and its characteristics instead of on the (experience of) individual itself. Nonetheless, Warr also describes the model to be 'enabling', in that people are able to influence the environment in such a way that they can influence its impact on themselves (Warr, 1987, p. 221).

Age

The vitamin model provides a standardized evaluation criterium of nine categories along which an environment can be evaluated and described. The commonly observed negative influence of unemployment on mental health is thus explained by describing the impoverished environment of the unemployed individual. The model can also account for the observed positive influence of employment on mental health, and it can explain differences in mental health between subgroups by explaining variations in the environments of these subgroups. According to Warr, unemployment for middle aged men results in greater negative effects on their availability of money, security, opportunities for personal contact and valued social position than it does for unemployment for young adults, as middle-aged men are more dependent on work to acquire these specific 'vitamins'. One study by Breslin & Mustard (2003) found that becoming unemployed led to increases in distress and, to some extent, clinical depression among 31- to 55-year-olds. This negative association between unemployment and mental health was not prevalent among young adults, aged 18 to 30 years.

Warr himself found the same, as unemployment for middle aged men brings with it a potential for greater drops in social position for older adults, they suffer more negative consequences (Warr, 1987; Warr & Jackson, 1984).

In contrast, Erikson (1968) argues that the consequences of unemployment are highest for young people, as they are in a developmental phase which is accompanied by more psychological and social stress. Find a job is a crucial part during this phase, as it helps in the identity formation of adolescents (Erikson, 1968, pp. 32-68). This makes young people more vulnerable to the negative effects of unemployment. This is indeed what Feather and O'Brien (1986) found in a longitudinal study of Australian school leavers, which reported a reduction in their perceived competence which resulted in a lower reported mental health in those who became unemployed after leaving school. Findings from Stauder (2019) show that overall, a large part of the poorer mental health of the unemployed might be caused by the selection of the unhealthy into unemployment; where mental health declines even before job loss. Only for people who experience unemployment early in life, mental health deterioration gains some momentum in the time after the transition, indicating a (weak) causal effect of unemployment on mental health for younger individuals. This suggests that middle aged men suffer no negative mental consequences from unemployment but were mentally unhealthy before becoming unemployed, while for young people unemployment does cause worse mental health. Research by Strandh et al., (2014) indicates that youth unemployment was shown to be significantly connected to poorer mental health at ages 21, 30 and 42.

Given this theoretical framework, there are two opposing theories. Warr on one hand states that middle aged people have more (financial) responsibility and thus suffer more from unemployment, while Erikson states that adolescents are in a crucial developmental stage where employment is part of their identity, which is why they suffer more from unemployment. Because of this framework and the corresponding empirical results, it is unclear which age group is influenced most by the negative effects of unemployment.

Because of these two opposing theories there are two hypotheses regarding the effect of age. The first hypothesis is that younger people suffer from a stronger negative effect of unemployment on their mental health than older people, due to their reliance on employment for their identity formation.

The second hypothesis is that older people suffer from a stronger negative effect of unemployment on their mental health than younger people, due to their greater (financial) responsibility and thus dependence on employment.

Data

In this paper we make use of data of the LISS (Longitudinal Internet studies for the Social Sciences) panel administered by CentERdata (Tilburg University, The Netherlands). The LISS panel data were collected by CentERdata through its MESS project funded by the Netherlands Organization for Scientific Research. The LISS panel consists of a representative sample of Dutch speaking respondents who form independent, private households. This excludes institutions, organizations, and other forms of collective households (Scherpenzeel & Das, 2010, p. 87).

The LISS panel is based on a simple random sample of 10.150 addresses which was drawn from the Dutch population registers, constructed by Statistics Netherlands (Scherpenzeel & Das, 2010, p. 89). Whenever the register contained more than one name at a household, the name of a random person aged 38 or older was selected. If all persons at the address were younger than 38, a random person aged 18 or older was selected. If all persons at the address were younger than 18, a random person was selected (Scherpenzeel & Das, 2010, p. 89). This selection method increased the chance of selecting a parent instead of a child. The panel consists of 5,000 households, comprising approximately 7,500 individuals (Scherpenzeel & Das, 2010, p. 87).

In order to maximize the response rate, households were first contacted using announcement letters and a brochure which explained the nature of the study. Furthermore, a 10-euro note was included with the letter, as a pilot study indicated that a prepaid incentive increased the participation rate (Scherpenzeel & Das, 2010, p. 88). Next, households which had a telephone number were contacted by phone while households who did not have a telephone number were visited by an interviewer. The interviewer asked respondents to participate in a 10-minute interview which consisted of a few questions about background demographics, whether a computer and internet connection were available to the household and a series of questions spanning the topics of social integration, political interest, leisure activities, survey attitudes, loneliness, and personality. Respondents without a computer or internet were provided with these after confirming their willingness to participate.

People who were hard to reach, or who were unwilling to participate, were contacted several times depending on whether they did not respond or brutally refused. When a contacted person agreed to participate but did not login to fill out the surveys, a series of reminders was started (Scherpenzeel & Das, 2010, p. 93). The aforementioned efforts to re-contact respondents who failed to respond resulted in satisfactory response rates.

The questionnaires themselves are conducted using internet surveys. Panel members complete these online survey's monthly. Depending on the subject they take about 15 to 30 minutes to complete (Scherpenzeel & Das, 2010, p. 89). Panel members receive financial rewards for each completed questionnaire. The household data is updated by one member within the household at regular time intervals. In addition to the LISS panel a separate Immigrant panel was made available from October 2010 up to December 2014. This panel consisted of approximately 1,600 households which were made up of 2,400 individual respondents. Of these 1,600 households, around 1,100 households or 1,700 individuals were of non-Dutch origin (Scherpenzeel, & Das, 2010).

This paper builds upon data from the survey on the subject of Health for Wave 7 of the Core Study, and data from the survey on the subject of Health for Wave 2 of the Immigrant Panel. These two different waves have been selected because they ran concurrently, thus eliminating any potential differences in cohort effects. The data from the Wave 2 Immigrant Panel is added to ensure there is enough data on the mental health and employment of first- and second-generation non-western migrants. Both these datasets have been enriched with data from the Background Variables, which the contact person must update every month to enter any changes that may have occurred before the regular survey can be filled out. The Background Variables contain information on gender, age, occupation, highest education level and country of origin. Table 1 gives an overview of the response rates and information for these two waves.

Table 1

Response overview for Wave 7 Core Study and Wave 2 Immigrant Panel

	Wave 7 Core Study Health	Core Study Background Variables	Wave 2 Immigrant Panel Health	Immigrant Panel Background Variables	Total
Begin / end date	04-11-2013 / 31-12-2013	01-11-2013 / 30-11-2013	04-11-2013 / 26-11-2013	01-11-2013 / 30-11-2013	
Selected number of household members	6217	9642	1797	3051	20707
Nonresponse	838	-	445	-	1283
Response	5379	-	1352	-	6731
Complete	5343	-	1341	-	6684
Incomplete	36	-	9	-	45

The dependent variable (self-reported mental health) is operationalized using the Mental Health Inventory (MHI-5) instrument, which is a well validated and reliable scale derived from the Short Form 36 (SF-36) (Friedman et al., 2005; Rumpf et al., 2001; Strand et al., 2003). It consists of looking at 5 Likert scale questions which indicate how often people have felt anxious, down, calm, depressed or happy in the past month. These variables are recoded so that a score of 0 indicates a depressed, stressed, or unhappy state and a score of 5 indicates a happy and calm state. These scores are multiplied by 4 and added up into a final scale which ranges from 0 (unhealthy) to 100 (healthy).

The independent variable unemployment is operationalized by looking at the occupational status of the respondents. On one hand are the employed people, who stated that they either have paid employment, work or assists in a family business or are autonomous professionals, freelancer, or are self-employed. On the other hand, you have unemployed people, who stated that they either are a job seeker following job loss or perform unpaid work while retaining unemployment benefit.

The independent variable of minority group membership is operationalized by looking at the variable herkomstgroep, which indicates the origin of the respondents conform the definitions given by CBS (2020, 2021a). Persons who are born abroad are defined as first generation migrants, while persons who were born in The Netherlands and of whom at least

one parent was born abroad are defined as second generation migrants. Furthermore, a distinction is made between western- and non-western migrants. Persons with an African, Latin-American or Asian (excluding Indonesia and Japan) background are considered as non-western migrants, while all others are considered as western migrants. This variable is recoded so that Dutch respondents and first- and second-generation western immigrants are coded as majority group members, while first generation non-western immigrants are coded as first-generation migrants and second-generation non-western migrants are coded as second-generation migrants.

As education is an important determinant of both individuals' work and health circumstances (Lynch et al., 1997Ross & Wu, 1995), this is controlled for by taking into account the highest attained educational level. This variable is recoded so that it becomes continuous, representing the number of years a person has attended school before graduating. As gender differences in mental disorders are among the most stable findings in psychiatry (Riecher-Rössler, 2017), and gender differences related to the family and economic situation can explain differences in mental health between unemployed men and women (Strandh et al., 2013). Gender is controlled for by taking into account the dichotomous variable female.

Before analysis started, the data was cleaned using R 4.0. The total dataset, after combining all waves and background variables, contained 12693 respondents. After selecting all respondents aged 15 to 75, 10087 respondents remained. After selecting the respondents who were either employed or unwillingly unemployed, 5791 respondents remained. After cleaning the dataset and removing all missing values for all variables to be used in the analyses, a valid n of 3483 remained. The full descriptive statistics can be found in Table 2 and Table 3. Before analyses are carried out, the scale validity of the MHI-5 scale is confirmed using CFA. CFA is used to test data-model fit of theoretical relations between variables (West et al., 2012). Finally, the internal reliability and consistency of the scale is tested using Cronbach’s alpha.

Table 2

Descriptives of continuous variables

	N	%	Mean	SD	Median	Min	Max	Skewness	Kurtosis
MHI-5	3483	-	74,39	17,02	80	0	100	-1,04	1,01
Age	“	-	45,73	11,22	46	19	74	-,19	-,80
Education	“	-	15,05	2,43	15	8	18	-,87	,38

Table 3

Frequency tables of categorical variables

	Category	N	%
Employment	Employed	3245	93,17
	Unemployed	238	6,83
Minority group	Native or Western migrant	3099	88,96
	First generation non-western migrant	267	7,67
	Second generation non-western migrant	117	3,36
Gender	Male	1726	49,56
	Female	1757	50,45

The effect of unemployment on mental health is tested first, followed by how this effect changes depending on minority group membership and age. The four hypotheses will be tested using multiple (non)linear regression analysis. This is the most appropriate form of analysis as allows for the regression of both categorical and continuous independent variables on the continuous dependent variable. The regression analyses are carried out using unstandardized variables, as the goal is to find out how certain personal characteristics influence the effects of unemployment, not compare associations between variables or compare the strength of different estimates. Models are compared using Akaike information criteria (AIC) in order to distinguish the model which exhibits the best fit to the data. AIC is chosen over ANOVA because this also compares fit but also penalizes higher model complexity. Because there are theoretical reasons to assume that there might be a curvilinear interaction effect between age and unemployment, a non-linear regression with an interaction between unemployment and age squared is added. All analyses are carried out using R 4.0.

Robustness

To test whether the relationships found are causal, longitudinal linear regression analyses are added. These analyses test the effect of getting unemployed (as opposed to staying employed) on the self-assessed mental health score, controlled for by all aforementioned variables. These analyses were carried out on a separate dataset, consisting of the original dataset enriched with data from wave 4 of the Main Panel and wave 1 of the Immigrant Panel, both conducted in 2010. After selecting all respondents which remained employed and all respondents which became unemployed, a valid N of 2412 remained. A new variable, which indicated whether people became unemployed in this period of time, was created by looking at their employment status in 2010 and 2013. Respondents which remained employed were coded to 0, while respondents which became unemployed were code tot 1. All other respondents were discarded. The change in MHI-5 score was operationalized by subtracting the MHI-5 score in 2010 from the MHI-5 score in 2013. Using both these variables, the effect of losing employment on the change in mental health score was tested. Furthermore, all relevant variables are regressed on this change in MHI-5 to analyze the effect of age, minority group membership and the interactions between unemployment, age, and minority group membership.

Results

The diagnostic plots (see Appendix A) indicate that the assumption of linearity is met. It also shows that the variance increases as the predicted values increase. Furthermore, there is an indication that the residuals are not normally distributed and the pattern in the scale-location plot indicates that the assumption of equal variance (homoscedasticity) is not met. When the error term is not homoscedastic, the OLS estimator is still consistent and unbiased but is no longer the most efficient estimator.

CFA analysis is used to check if the supposed theoretical relations between the variables that make up MHI-5, exist. The internal consistency and reliability of the MHI-5 scale is analyzed using Cronbach's Alpha. The $\chi 2$ goodness-of-fit of the CFA analysis was significant, $\chi 2\ (5) = 507.301$, $p < .001$, indicating significant discrepancies between the observed covariance matrix and model-implied covariance matrix. Both the SRMR of 0.047 and the CFI of 0.934 indicate acceptable model fit. The TLI of 0.868 and RMSEA 0.168 indicate poor model fit while the SRMR of 0.053 also indicated acceptable model fit (Schreiber et al., 2006). As only the TLI and RMSEA indicated poor model fit, the model is deemed acceptable. Furthermore, factor correlations (see appendix B) were quite low,

indicating that the factors are clearly distinguishable. This is further corroborated by the Cronbach's alpha of ,85, which indicates that the MHI-5 scale exhibits satisfactory internal consistency and reliability (Taber, 2018).

The first hypothesis is tested with a multiple linear regression analysis which predicts the Mental Health Inventory (MHI-5) score using employment status, while controlling for gender and years of education. A significant regression equation was found (F (3, 3479) = 16,73, $p <$,001), with an R2 of ,014. Model 1 (Table 4) shows that employed men score 73,49 on the Mental Health Inventory (MHI-5) scale. Being unemployed decreases this score by -6,31, $p <$,001 and being female also decreases this score by -2,34, $p <$,001. The highest level of education someone has completed does not significantly alter their MHI-5 score. These results indicate that the first hypothesis can be confirmed, and unemployment negatively affects mental health.

The second hypothesis is tested with a multiple linear regression analysis which predicts the MHI-5 score using employment status, minority group membership and the interaction between the two, while controlling for gender and years of education. A significant regression equation was found (F (7, 3475) = 12,96, $p <$,001), with an R2 of ,025. Model 2 (Table 4) shows how employed men which are no first- or second-generation migrants score 74,33 on the MHI-5 scale. Being unemployed negatively affects this score by -5,57, $p <$,001. Being a first-generation non-western migrant negatively affects this score by -5,87, $p <$,001 and being a second-generation non-western migrant negatively affects this score by -4,85, $p <$,001. Being female also negatively affects this score by -2,41, $p <$,001. The negative effect of unemployment does not significantly differ between natives, first-generation non-western migrants, and second-generation non-western migrants. Years of education also has no significant effect on the MHI-5 score. The second hypothesis, which predicted that the negative effect of unemployment on the self-assessed mental health of minority group members is stronger than the same effect for members of the dominant group in society, except for minority group which are first generation non-western migrants, is not confirmed. First generation non-western migrants do suffer from similar negative effects as natives, but second-generation non-western migrants do not suffer from worse effects than natives.

The final two hypotheses, regarding age, are tested with a multiple nonlinear regression analysis which predicts the MHI-5 score using employment status, age, and the interaction between the two, while controlling for gender and years of education. The model incorporates a squared term for age in order to find differences in the effect of unemployment on mental health for different age groups. A significant regression equation was found (F (7,

3475) = 16,81, p < ,001), with an R2 of ,027. Model 3 (Table 4) shows how employed men score 65,14 on the MHI-5 scale, plus their years of education times ,27, p = ,025. Being female decreases the MHI-5 score by -2,06, p < ,001. While age nor age squared has a direct effect on mental health, there is an interaction with unemployment. Being unemployed decreases the MHI-5 score by -2,38, p = ,002 for each year of age, and this negative effect levels off with ,03, p < ,001 with each year of age.

The interaction between age, age squared, and unemployment significantly predict unemployment, and it shows that younger unemployed people score higher on the MHI-5 scale than older people. This decrease in score decreases as respondents grow older, it diminishes over the years. This outcome rejects the first hypothesis of age, which hypothesized that younger people suffer from a stronger negative effect of unemployment on their mental health than order people. It does confirm the second hypothesis of age, which hypothesized that middle aged people suffer from a stronger negative effect of unemployment on their mental health than younger people.

The fourth model contains all variables, apart from the interactions, and predicts the MHI-5 score the best. While all estimates are significant, the explained variance remains low (R2 = ,031, F(6, 3476) = 18,31, p <.001). Akaike model criterion (AIC) was used to compare the four models and select the best fitting model. The AIC output (see appendix C) indicates that the best-fitting model is model 4, carrying 100% of the cumulative model weight but exhibiting the lowest AIC score.

Table 4

Multiple (non)linear regressions predicting self-assessed mental health scores for employed and unemployed people

	Model 1	**Model 2**	**Model 3**	**Model 4**
	B (SE)	**B (SE)**	**B (SE)**	**B (SE)**
Intercept	73,49 (1,83)***	74,33 (1,83)***	65,14 (4,67)***	67,32 (2,38)***
Unemployment	-6,31 (1,14)***	-5,57 (1,27)***	39,09 (16,66)*	-5,93 (1,13)***
Female	-2,34 (,57)***	-2,41 (,57)***	-2,06 (,57)***	-2,20 (,57)***
Years of Education	,17 (,12)	,15 (,12)	,27 (,12)*	,24 (,12)*
First gen migrant	-	-5,87 (1,16)***	-	-5,35 (1,08)***
Second gen migrant	-	-4,85 (1,67)**	-	-4,23 (1,61)**
Unemployment * First gen migrant	-	1,51 (3,18)	-	-
Unemployment * Second gen migrant	-	-7,13 (5,28)	-	-
Age	-	-	,17 (,20)	,12 (,03)***
Age²	-	-	-,00 (,00)	
Unemployment * Age	-	-	-2,38 (,76)**	-
Unemployment * Age²	-	-	,03 (,01)***	-

Note: N = 3483, explained variance model 4: R2 = ,031, F(6, 3476) = 18,31, p <.001. Dependent variable "MHI_5 (see mental health scale)", * p < 0,05, ** p < 0,01, *** p < 0,001.

Finally, model 5 of the separate longitudinal analysis (see table 5) indicates that becoming unemployed does not significantly predict changes in mental health for the whole population. Model 6 indicates that becoming unemployed does not seem to affect native Dutch or other majority group members, but it does affect second generation migrants as is indicated by the significant interaction between becoming unemployed and migration group membership. First generation migrants are not significantly affected but the results revealed a

non-significant trend in the predicted direction, 95% CI [-21,98, 0.96]. The results are in line with the second hypothesis, which predicted that second generation migrants would suffer more from the effects of unemployment than natives and first generation migrants. Model 7 looks at the effect of age. While the interaction between unemployment and age is not significant, the results indicate a non-significant trend in the predicted direction: 95% CI [-4,93, 0,25]. The interaction between unemployment and age squared is significant, indicating that the decrease of mental health score over age becomes smaller as people become older. These results suggest that the third hypothesis can be rejected while the fourth hypothesis can be confirmed, older people suffer more from unemployment than younger people.

Table 5

Multiple (non)linear regressions predicting the change in self-assessed mental health score between 2010 and 2013 for employed and unemployed people

	Model 5	**Model 6**	**Model 7**
	B (SE)	**B (SE)**	**B (SE)**
Intercept	-,49 (2,08)	-,37 (2,09)	2,31 (5,80)
Becoming unemployed	,95 (1,56)	2,20 (1,63)	46,71 (30,31)
Female	,85 (,67)	,83 (,67)	,87 (,67)
Years of Education	-,00 (,13)	-,01 (,13)	-,02 (,14)
First gen migrant	-	-1,13 (1,41)	
Second gen migrant	-	2,15 (2,07)	
Becoming unemployed * First gen migrant	-	-10,51 (5,85)	
Becoming unemployed * Second gen migrant	-	-43,81 (16,55)**	
Age	-	-	-,09 (,23)
Age²	-	-	,00 (,00)
Becoming unemployed * Age	-	-	-2,34 (1,32)
Becoming unemployed * Age²	-	-	,03 (,01)*

Note: N = 2412, explained variance model 6: R2 = ,01, F(7, 2404) = 2,02, *p* =.048. Dependent variable "MHI_5 change", * *p* < 0,05, ** p < 0,01, *** *p* < 0,001.

Conclusion

In this study the question whether unemployment affects self-assessed mental health, and how minority group membership or age differences influence this effect, was examined using multiple (non)linear regression on quantitative survey data.

The cross-sectional results indicate that unemployment does go hand in hand with a lower self-assessed mental health score. Furthermore, first generation non-western migrants, and to a lesser extend second generation non-western migrants, also suffer from a lower self-assessed mental health score than western migrants and natives. The same goes for women. As people grow older, their self-assessed mental health increases. The longitudinal analyses shed a different light. The results indicate that unemployment does not cause lower mental health scores per se, unless you are a second-generation migrant.

The second part of the research question focussed on differences in the negative effect of unemployment on self-assessed mental health for different (age) groups. It was hypothesized that this negative effect would be worse for second generation non-western migrants, and similar for first generation non-western migrants, compared to natives. It was also hypothesized that either young people or middle-aged people would suffer more from the negative effects of unemployment, as both young and older people depend heavily on employment for either the availability of money and security or identity formation.

Interestingly, the cross-sectional results indicate that the negative effect of unemployment on self-assessed mental health does not change for first- or second-generation non-western migrants. Age does influence the negative effect, the significant interactions between unemployment and age indicate that older people score lower on the self-assessed mental scale when unemployed. This decrease of mental health over age becomes smaller as people become older. The longitudinal analyses show different results for migrant groups, and similar results for age. The results for migrants indicate that unemployment causes a lower self-assessed mental health score for second generation migrants, but not for first generation migrants. The results for first generation migrants do indicate a trend in the negative direction, although this estimate is not significant at the 95% confidence level. The results for age also indicate a non-significant trend in the negative direction. This negative effect significantly levels off as people grow older. This is similar to what was found in the cross-sectional analysis.

In conclusion, the analyses have shown that unemployment correlates with lower self-assessed mental health scores, but that it does not cause it per se. The correlation between unemployment and age is influenced by age, where older people suffer more negative effects than younger people, and this negative effect levels off as people grow older. Finally, when looking at the causal relations, age seems to have a similar effect. It is important to note that the results only show a non-significant trend in the negative direction. For migrants, unemployment does seem to cause lower self-assessed mental health scores, although for first generation migrants this is a non-significant trend, while for second generation migrants it is a significant result.

Discussion

The reader should bear in mind that the cross-sectional analyses are unable to indicate causation between unemployment and self-assessed mental health. The drawback of the cross-sectional research design which was used is that it can only show correlation between two variables, it is unknown whether unemployment causes a lower self-assessed mental health score or whether a lower self-assessed mental health score causes unemployment. Both could be the case. This paper has elaborated on how unemployment could cause lower mental health, but someone with a lower mental health could also become unemployed as they are less attractive employees for employers.

While the results of the analyses indicate that unemployment goes hand in hand with a lower self-assessed mental health score, the hypothesis that the negative effect of unemployment on the self-assessed mental health of minority group members is stronger than the same effect for members of the dominant group in society, except for minority group which are first generation non-western migrants, was disputed. This could be due to the fact that the data does not conform to all assumptions required for linear regression. While ordinary least squares regression is still expected to give unbiased estimates, the unconformity to all assumptions can impair the power. Combined with the small samples of unemployed non-western migrant groups (unemployed first-generation n = 39, unemployed second-generation n = 12) the power to find effects is quite small, leading to type 2 errors. This has already been a problem with previous research, as cited from Paul & Moser (2009).

From a theoretical standpoint, the fact that both first- and second-generation non-western migrants score significantly lower on mental health could indicate that non-western migrants are susceptible to somatic fixation, where patients inadequately respond to their illnesses and struggle more than native Dutch, as was already cited from De Bruyn (1989).

Furthermore, the fact that the negative effect of unemployment on self-assessed mental health does not differ between the generations of non-western migrants and the native population, might indicate that employment is not as an important of a factor in their acculturation. This could mean that becoming unemployed does not increase the sense of rejection from the majority group, and thus does not lead to less successful acculturation strategies, such as separation or marginalization. This is far from proven, as there could be other activities which replace employment as a source of regularly shared experiences and contacts with people outside the nuclear family, such as hobbies and volunteer work. Volunteers are not included in the analyses as only the self-assessed mental health score of employed and unemployed participants was compared.

The results in model 4 indicate that being a first-generation non-western migrant has a stronger negative effect on mental health than being a second-generation non-western migrant. Based on the healthy migrant effect, a significantly worse effect for second generation migrants was expected, which was not found. This could be an indication that the healthy migrant effect does not buffer against the negative effect of being a minority. It could also indicate that the healthy migrant deteriorates over time, even for first generation migrants. Finally, it could mean that the fact that first generation non-western migrants are less integrated into society than second generation non-western migrants, has a greater effect on self-assessed mental health than can be buffered by the healthy migrant effect.

Interestingly, the fact that the negative effect of unemployment does not differ between the native population and migrant groups, and between the two migrant groups themselves, is disputed by the results from the longitudinal analyses. Although there is only a hint of a negative effect for unemployed first-generation migrants, there is a significant lower score for second-generation migrants. Taken these two combined, this could suggest that loss of employment does indeed hamper the integration of all migrants into society, which increases the negative effects of unemployment. Furthermore, the difference in the effect of unemployment on mental health between the two migrant groups could possibly be caused by differences in their coping resources, indicating a healthy migrant effect.

Age itself significantly predicts a higher self-assessed mental health score. This main effect disappears when age interacts with itself and unemployment, only the interactions with unemployment remain. These significant interactions indicate that the negative effect of unemployment on the self-assessed mental health score differs between younger and older people. This result disputed the confirmed the first hypothesis of age, based on the theory by Erikson (1968). He argued that young people suffer from the consequences of unemployment

the most, due to their reliance on employment for their identity formation. The result confirmed the second hypothesis of age, based on the theory by Warr (1987). He argued that middle aged people would endure greater negative effects on their availability of money, security, opportunities for personal contact and valued social position due to unemployment, and thus suffer from unemployment the most. The results suggest that the stress of not fulfilling your (financial) responsibilities outweighs the negative effects of not being able to form your own identity. While this is a bold statement, it could also be that the effects of unemployment on your identity formation are more likely to not show in someone's self-assessed mental health score until much later in life, when the unsuccessful identity formation becomes a problem.

As there are large differences in the reported mental health between the employed and unemployed, and between the natives and non-western migrants, the scientific field could benefit from further research into possible interactions between unemployment and migrant group membership. This research should focus on creating a dataset which encompasses enough data on unemployed migrants, as both this paper and previous research has been hampered by small sample sizes. The scientific field could also benefit from research using longitudinal designs. As most papers only describe the correlation between unemployment and mental health, shedding light on the causal relation can yield more insight. The results from the cross-sectional and longitudinal analyses showed different results, further indicating the need for thorough cross-sectional research designs which try to exclude reversed causality.

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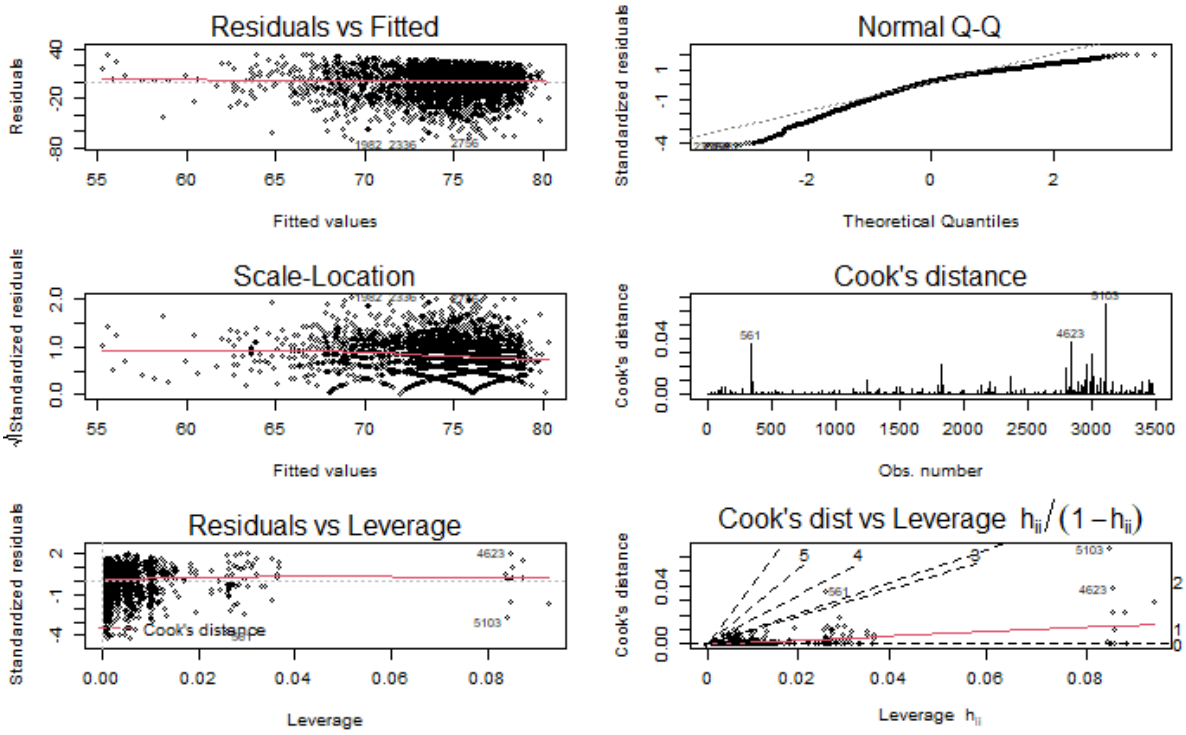
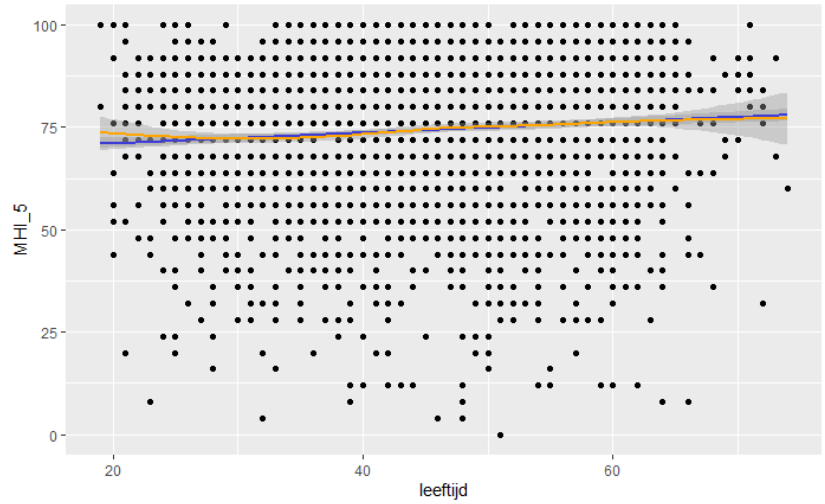
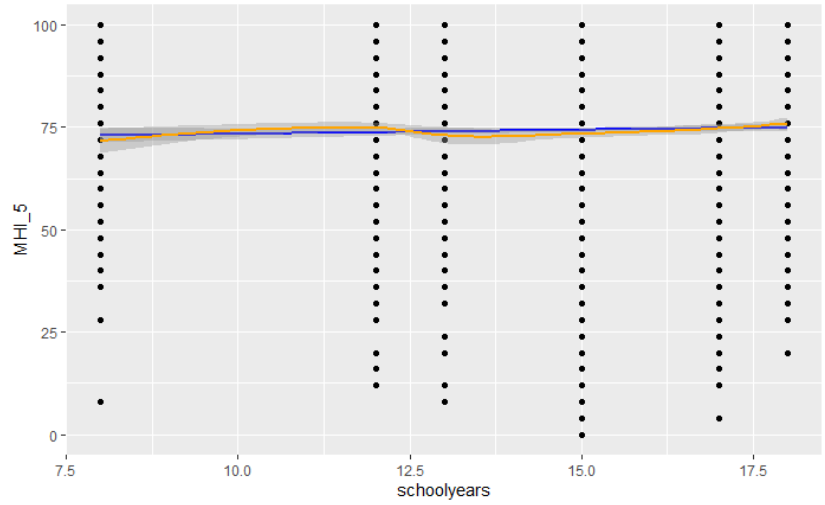
Appendix A: Diagnostic plots







Appendix B: Correlation table for Cronbach's Alpha

	Anxious	Down	Calm	Depressed	Happy
Anxious	1,00	-	-	-	-
Down	0,54	1,00	-	-	-
Calm	0,49	0,51	1,00	-	-
Depressed	0,51	0,70	0,49	1,00	-
Happy	0,40	0,54	0,61	0,55	1,00

Appendix C: AIC output

Model selection based on AICc:

	K	AICc	Delta_AICc	AICcWt	Cum.Wt	LL
Model 4	8	29534,21	0,00	1	1	-14759,08
Model 3	9	29551.00	16,79	0	1	-14766,47
Model 2	9	29554.84	20,63	0	1	-14768,40
Model 1	5	29586,67	49,88	0	1	-14788,33