

Original article

Socioprofessional and psychological variables that predict job finding

Variables socioprofessionnelles et psychologiques dans la prédiction de la sortie du chômage

R. Meyers^{1,*}, C. Houssemand¹

University of Luxembourg, route de Diekirch, 7220 Walferdange, Luxembourg

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Abstract

The predictive power of socioprofessional and psychological variables on job finding was investigated with a cohort of 384 unemployed people in Luxembourg. The aim was to assess whether, in statistical profiling, some psychological variables have incremental validity over and above the more commonly used socioprofessional dimensions. For the period from 0 to 6 months and the period from 0 to 12 months, socioprofessional variables measured at the beginning of the unemployment period, allowed classification of three quarters of the subjects. Adding significant psychological dimensions did not improve the prediction in either case. Further analysis was done on persons still unemployed at 6 months (i.e. those who found it more difficult to find a job). For the period from 6 to 12 months, age and sex allowed correct classification of 62.6% of the subjects. Adding five psychological variables (openness, self-efficacy, social anxiety, symptom reduction coping, intelligence) significantly improves this percentage by 12.1 points. In the proposed model, psychological factors therefore only play a role in job finding for unemployed people who have more difficulty in finding a job. Results are discussed in terms of labour market mechanisms.

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Keywords: Unemployment; Profiling; Employment; Reemployment

Résumé

Le pouvoir prédictif de variables socioprofessionnelles et psychologiques sur la sortie du chômage a été étudié auprès d'une cohorte de 384 demandeurs d'emploi au Luxembourg. L'objectif était de vérifier si, dans le profilage statistique des chômeurs, certaines variables psychologiques ajoutent de la validité incrémentielle aux dimensions socioprofessionnelles communément utilisées. Pour les périodes allant de zéro à six mois et de zéro à 12 mois, des variables socioprofessionnelles mesurées à l'entrée du chômage permettent une prédiction juste du statut d'emploi à l'issue de la période pour trois quarts des sujets. Le fait d'y ajouter les dimensions psychologiques significatives n'améliore pas la prédiction dans les deux cas. Une analyse a été faite sur les personnes encore au chômage à six mois et donc plus difficiles à placer. Pour la période allant de six à 12 mois, l'âge et le sexe permettent de prédire correctement le statut d'emploi à la fin de la période pour 62,6 % des sujets. Le fait d'y ajouter cinq variables psychologiques (ouverture, auto-efficacité, anxiété sociale, *coping* de réduction de tensions, intelligence) augmente significativement la prédiction de 12,1 points de pourcents. Dans le modèle proposé, les facteurs psychologiques ne jouent donc un rôle dans la sortie du chômage que pour les personnes ayant le plus de difficultés à trouver un emploi. Les résultats sont discutés en termes de mécanismes du marché de l'emploi.

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Mots clés : Chômage ; Profilage ; Emploi ; Réemploi

1. Introduction

Preventing long-term unemployment has become a major priority in active labour market policies in Europe. It has been noted that the characteristics of jobless people when they register as unemployed, make it possible to predict how easy or difficult getting a job will be. What then would be the pertinent dimensions to consider? Statistical predictive studies have been done

* Corresponding author.

E-mail addresses: raymond.meyers@uni.lu (R. Meyers),
claude.houssemand@uni.lu (C. Houssemand).

¹ <http://www.uni.lu>.

in the framework of unemployment profiling (OECD, 1998). This consists of detecting at an early stage those people at risk of becoming long term unemployed, in order that targeted help can be offered to them from the beginning of their registration period.

Profiling has been put into practice mainly in the Public Employment Services (PESs) in the United States, Australia, the Netherlands, the United Kingdom, in Denmark, and more recently in France. A certain number of studies preceded, accompanied or followed these implementations. For example, an American study (Black et al., 2003) showed a significant increase in the return to job when profiling was used; a mean reduction of unemployment duration of 2.2 weeks was found. Unemployed people at risk had to follow additional training and follow-up; compared to a control group which did not benefit from these measures. Costs were reduced, the PESs saved \$143 per profiled unemployed person, and compared to the control group, subjects improved their income by a mean of \$1050 per annum. A Danish study (Rosholm et al., 2004), based on indicators like age, place of residence, marital status, health status, unemployment allowances, professional history, etc., found a probability of 0.66 to predict employment status accurately after 6 months. A Swiss research study (Lechner and Smith, 2007) compared the effectiveness of allocating people to back-to-job programmes based on the advice of caseworkers compared to statistical models. Data also showed in this study that statistical profiling was more effective.

Recent reviews of relevant literature (Georges, 2006; Hasluck, 2004) have shown that profiling is done mainly in terms of demographic, economic and socioprofessional variables taken from the records of unemployed persons: age, gender, qualifications, duration of work-experience, education and training, nationality, family characteristics, last job, benefit amount, income, loans, etc. The effect of these variables on unemployment is well-known (Demazière, 1995) and there is general consensus about this, at both the scientific and policy levels.

However, there is also some evidence in the scientific literature not directly dealing with profiling, that psychological dimensions may have some validity in predicting the duration of unemployment, and could be used in profiling in addition to the more traditional dimensions. But there are limits to measuring psychological dimensions simultaneously, because an assessment battery that is too large would overload subjects. For this reason, a thorough review of the literature was necessary to collect the most promising variables that could provide useful predictors. Psychological profiling should also use standardized valid and reliable measures, and not subjective evaluations done, for example, by social workers in employment agencies or by researchers themselves. This would avoid the well-known shortcomings of so-called “intuitive” and “clinical” evaluations (Dawes, 1994).

To predict unemployment, it is necessary to select variables that have been shown to be promising in this way, even if the literature review provides mixed results. Therefore, variables for which the results are not unanimous were also selected. In

order to have incremental validity over and above socioprofessional dimensions, the psychological variables needed first to have some effect by themselves, which was the reason for the literature review. The following candidate variables were selected: those which could predict employment finding, those which could predict job search intensity and those which are generally adaptative in everyday life (and which could therefore become predictive). In order to give a structure to the literature review, six big groups of dimensions were made: personality (which has some influence on how one looks for work and how one presents oneself to potential employers), self-perception (how one sees oneself among others as a candidate for a job, which has some influence on how one is seen by important actors in the job search process), adaptation and action orientation (how one copes with the situation, how important a job is and how proactive one is in the job search process), social support (how much help one can rely on), mental health (how adapted one is to the situation) and cognitive ability (how able one is at solving problems in general). This classification into six dimensions was done only for heuristic reasons after having collected the material in the literature. It does not imply that new theoretical concepts were constructed in order to be measured.

1.1. Personality

The Big Five variables were assessed in relation to job search and unemployment duration. Wanberg et al. (2000) studied the Big Five in relation to unemployment duration, network intensity and job search. They found that openness, extraversion and conscientiousness were the best predictors of job search intensity, conscientiousness being the only significant negative predictor of unemployment duration. Conscientiousness and extraversion correlated significantly with job satisfaction. Similar results were reported by Schmit et al. (1993), who found all the Big Five as predicting assertive job search behaviour. Wanberg et al. (1996) found that conscientiousness was associated with job-search intensity. In their meta-analysis, Kanfer et al. (2001) found that extraversion and conscientiousness showed substantial relation to job search. Caldwell and Burger (1998) found that extraversion, openness and conscientiousness were correlated with college students' use of social sources as a means of preparing for job interviews.

There is also indirect evidence for some Big Five variables. For example, it has been shown that conscientiousness is consistently linked to job performance (Barrick and Mount, 1991; Salgado, 2003). Wanberg and Kammeyer-Mueller (2000) have shown that openness and extraversion are good predictors of proactivity in the socialization process by which a new employee integrates into organizational functioning, whereas McKee-Ryan et al. (2005) have shown that for unemployed people, proactivity increases their chance of finding a job more quickly.

In summary, unemployed people who are more open to experience, more extraverted and more conscientious may find a job quicker. These dimensions could therefore be candidate variables for profiling.

1.2. Self-perception

What is meant by self-perception is the way that unemployed people perceive themselves in everyday life, this self-perception impacts their ways of looking for a job.

1.2.1. Self-esteem

Self-esteem is a widely investigated variable and several studies on unemployed people included this dimension. Even though some of these studies found that self-esteem was a predictor of job search outcomes (Ellis and Taylor, 1983; Kanfer et al., 2001), self-esteem seems to be a better predictor of mental health and subjective well-being than of reemployment (Wanberg, 1997).

1.2.2. Self-efficacy

Self-efficacy is defined as peoples' judgment of their own capabilities to organize and execute courses of action required to attain designated types of performance (Bandura, 1986). It is also a widely investigated variable in unemployment studies, general self-efficacy (e.g., Albion et al., 2005; Eden and Aviram, 1993; Wiener et al., 1999) as well as job-search self-efficacy (e.g., Crossley and Stanton, 2005; Côté et al., 2006; Kanfer et al., 2001; Moynihan et al., 2003; Saks, 2006; Saks and Ashford, 1999; Wanberg et al., 1999).

In most studies, job-search self-efficacy is a good predictor of job search intensity and success. For example, in their study, Crossley and Stanton (2005) found that job-search self-efficacy was linked to search intensity, interview success and job search success 6 weeks later. Côté et al. (2006) found that job-search self-efficacy was linked to job search clarity, search intensity, the numbers of offers received and employment status some 4 months later. Moynihan et al. (2003) found that job-search self-efficacy was not positively related to the number of interviews per se, but was related to the number of offers from preferred employers. Finally, in their meta-analytic review, Kanfer et al. (2001) showed that job-search self-efficacy was linked to job search behaviour, the latter being significantly related to finding a job.

1.2.3. Core self-evaluations

Core self-evaluations are a relatively new concept (Judge et al., 2002), aggregating self-esteem, neuroticism, self-efficacy and internal locus of control (LOC). It has already been studied in relation to job search, where it was linked to persistence in job search and reemployment, even if the effect size was small (Wanberg et al., 2005). In the conclusion of their meta-analysis, McKee-Ryan et al. (2005) recommended further investigation directly on this aggregate construct.

In summary, unemployed people who have a better self-esteem, more self-efficacy and better core self-evaluations may find a job more easily. These three dimensions could be candidate variables for profiling.

1.3. Adaptation and action orientation

By adaptation and action orientation, are meant variables that show the way in which the unemployed person is actively ori-

ented towards looking for a job: personal commitment to work, perceived control of the unemployment situation, coping with the situation and social skills that permit effective interaction with unemployment agencies, potential employers and social mediators to possible employment.

1.3.1. Employment commitment

A large amount of studies have included employment commitment (Banks and Henry, 1993; Jackson et al., 1983), sometimes also called work valence (Van Hooft et al., 2004; Vinokur and Caplan, 1987), employment importance (Feather and Bond, 1983), job importance (Lynd-Stevenson, 1999), employment value (Vansteenkiste et al., 2005) or work-role centrality (McKee-Ryan et al., 2005). Several studies have shown the positive relation between employment commitment and job search intensity (Wanberg et al., 1999) and future employment status (Lynd-Stevenson, 1999; Schaufeli and Vanyperen, 1993). However, meta-analysis by Kanfer et al. (2001) has shown that employment commitment was more strongly related to job search behaviour than to job finding itself.

1.3.2. Perceived control of unemployment

As LOC is a generalized belief that events depend on internal or external factors, perceived control is more domain-specific and transitory, and concerns a specific stressful condition, in this case the situation of being unemployed. Levenson (1973) refined the one-dimensional internal-external distinction in adopting a multidimensional view with three factors: internal belief on one side, and two types of external types of control-beliefs on the other: chance and powerful others.

Internal LOC has been shown to be related to several work-related outcomes, such as positive task and social experiences, job satisfaction, job motivation, job performance and career success (see Ng et al., 2006, for a meta-analysis). In unemployment research, some data show that internal LOC predicts reemployment. Ginexi et al. (2000) found that internal control beliefs were stable during a period of 1 year of unemployment, but initial internal control belief predicted reemployment at 6 months, controlling for sociodemographic factors. However, no effect was found for the time after 6 months. Tiggemann and Winefield (1989) found that LOC of school-leavers predicted unemployment 1, 3 and 5 years later.

In her study, Wanberg (1997) measured both global perceived control (the extent to which an individual views life in general as under personal control) and situational control (perceived control over the specific situation of unemployment) of recently unemployed people, but neither of these predicted reemployment 3 months later. Finally, a meta-analysis by Kanfer et al. (2001) has shown that internal LOC was weakly related to job search behaviour and a little more to length of unemployment.

1.3.3. Social skills

Surprisingly, social skills as the ability to effectively read, understand and control social interactions (Ferris et al., 2001), have been very marginally studied in relation to unemployment. This is somewhat striking given the general insistence on these skills in job advertisements. For example, they are not included

in the meta-analysis of Kanfer et al. (2001). Social skills may, however, be important in the job search process, as unemployed people have to make contacts, present themselves to potential employers, keep up with a network of people that could provide information and help in the job search (Wanberg et al., 1999), and make good impressions in recruitment interviews (Moynihan et al., 2003).

1.3.4. Coping

Coping is how a person is able to deal with a stressful situation. A widely used distinction in the coping literature is the one between problem-focused coping (efforts directed at defining the problem, generating alternative solutions, and acting to eliminate the source of stress) and emotion-focused coping (attempts to lessen emotional distress through techniques such as avoidance, minimizing, or distancing) (McKee-Ryan et al., 2005). A similar distinction, sometimes used in the unemployment research, is between control oriented and escape oriented coping (Kinicki and Latack, 1990), the first referring to proactive cognitive and behavioural strategies, and the second referring to avoidance of the situation. Wanberg (1997) tested coping strategies in connection to reemployment 3 months later and found that the only control oriented strategy that predicted reemployment was proactive job search. Contrary to expectations, escape oriented coping did not predict a reduced probability of becoming reemployed.

A more differentiated view of coping may be useful to test in relation to unemployment duration, because the two-factor distinctions often throw together very different strategies. The cybernetic coping theory of Edwards (1992) distinguishes five types of coping:

- changing the stressful situation;
- accommodation;
- devaluation of the stressor;
- avoidance of the stressful situation;
- symptom reduction (Edwards and Baglioni, 1993).

In summary, it can be presumed that a person who has more employment commitment, more internal perceived control of unemployment, more social skills, and uses more change and accommodation coping schemes and lesser devaluation, avoidance or symptom reduction coping strategies will find a job more easily. These dimensions could therefore be candidate variables for profiling.

1.4. Social support

Social support provided by a partner, family, friends, social networks and so on, has often been studied in connection to unemployment, because it has been noted that jobs are often found through contacts with acquaintances, relatives, friends or professional networks (Wanberg et al., 2000). These studies more often made the link between social support and mental health (e.g., Vinokur and van Ryn, 1993) rather than to reemployment (Wanberg et al., 2000). Meta-analysis by Kanfer et al. (2001) has shown that social support is related to

job search behaviour, but not to unemployment duration. The hypothesis could be tested that a person who has more social support and perceives this support as more satisfactory will find a job more easily.

1.5. Mental health

Evidence for the impact of mental health on employment outcomes is weak and most studies found no effect of baseline emotional functioning (Kessler et al., 1989; McKee-Ryan et al., 2005). Nevertheless, it could be interesting to test mental health in the special context of Luxembourg's favourable labour market (as explained later in the text), with the idea that if objective constraints are weaker, it could be that mental problems may play a bigger role than in situations where constraints are stronger (Kanfer et al., 2001). For comparison, the study of Kessler et al. (1989), which showed that no effect of prior mental health took place in an environment of overall 13.3% unemployment, whereas the present study is located in a context where unemployment fluctuated between 4 and 5%.

1.5.1. Psychological distress

Psychological distress as mostly assessed by the General Health Questionnaire (GHQ12) (Goldberg, 1972) has been used in a wide number of studies in relation to unemployment and well-being, where it was generally the dependant variable (e.g., Banks and Jackson, 1982; Cassidy, 2001; Vansteenkiste et al., 2005). Studies mostly showed that unemployment could increase psychological distress. Taris (2002) provided some support for the reverse causation; initial mental health could influence chances of finding a job, the intention to look for a job and job-searching behaviours. But in their meta-analysis, Kanfer et al. (2001) found no support for this assumption, concluding that this relationship may be moderated by other variables such as human capital and coping resources.

1.5.2. Social anxiety

Social anxiety or social phobia is defined as a persistent fear of embarrassment or negative evaluation while engaged in social interaction or public performance (Heimberg et al., 1999). Social anxiety disorder can interfere with any facet of life that evokes the spectre of evaluation by others. It has been shown to impair many aspects of social life (Schneier et al., 1994). Surprisingly, social anxiety has not been studied as a part of the job search process. But fear of contacts could have a detrimental effect, as it has been shown that job search is favoured by network intensity (Wanberg et al., 1999) and proactive job search (Wanberg, 1997), both being potentially hindered by social anxiety.

1.5.3. Perceived stress

Perceived stress is more often considered as an outcome rather than a predictor of unemployment duration. It is also studied more often as a predictor of well-being (McKee-Ryan et al., 2005) than of reemployment. But stress is indirectly considered through the coping construct, which implies coping with a situation appraised as stressful (e.g., Edwards, 1992).

1.5.4. Depression

Taris (2002) found some evidence that initial depression, as part of a general construct labelled mental health, could reduce the possibilities of employment. But Ginexi et al. (2000) found in a longitudinal study of 1 year that depression was unrelated to time to reemployment.

In conclusion, the hypotheses will be tested that an unemployed person who has low psychological distress, low social anxiety, little perceived stress and less depressive moods will find a job more quickly. These dimensions could be part of a predictive model of unemployment duration.

1.6. Cognitive ability

Surprisingly, cognitive ability has rarely been studied in relation with unemployment duration and job search success (for exceptions, see Layton, 1985; Lynn et al., 1984). This is surprising, given the wide interest in the relationship between cognitive ability and job performance (see Meyers and Houssemand, 2006; Schmidt and Hunter, 2004, for reviews). Non-verbal intelligence may be more interesting to use with unemployed people, because verbal intelligence is strongly correlated with literacy, and jobless people often lack competencies at this level. For example, half of the newly registered unemployed people in Luxembourg have only finished compulsory education. The hypothesis will be tested that people with better cognitive abilities will find a job more easily.

1.7. Socioprofessional dimensions

A review of the scientific as well as the administrative literature (Cortese and Meyers, 2004; Demazière, 1995) enables several hypotheses on the socioprofessional variables which are most pertinent in predicting unemployment duration. They can be grouped together into two categories. The first group consists of those variables which have an incentive effect (like living with a partner, having dependants, having loans to reimburse) or an uninculative effect (like receiving an allowance, having an income) on job search intensity. In order to simplify, one can refer to these as the incentive socioprofessional variables. The second group consists of those variables which improve or diminish the economic attractiveness of employees on the labour market and which will therefore shorten or lengthen the unemployment duration. People who are young, male, white collar employees (as opposed to blue collar workers), have more training, general education diplomas or more professional experience, are generally considered to be more attractive on the present labour market. These dimensions can be called valued socioprofessional variables. Both types of variables can be retained as candidates for the prediction of unemployment duration.

2. The present study

The aim of the present study is to test whether in the statistical profiling of unemployed people, the psychological dimensions

selected from the literature provide incremental validity over and above the usually used socioprofessional dimensions.

2.1. Context

The socioeconomic context of the Luxembourg labour-market may have some impact on the profiles of unemployed people. Luxembourg has a rapidly growing service sector building upon the partial decline of traditional industry sectors. The country is part of a regional labour-market, so that residents have strong competition with frontiersmen from France, Belgium and Germany. One third of the work force is constituted of foreigners (mostly Portuguese), a second third are frontiersmen and the last third are Luxembourgish. Frontiersmen do not have access to Luxembourg unemployment insurance, but do to those of their country of origin.

At the same time, unemployment rates are very low compared to all other European countries, fluctuating between 4 and 5% over the year. Half of the newly registered unemployed people have poor qualifications. Luxembourg also has a net creation of jobs every year, mainly due to the booming service sector. Despite this very favourable labour-market situation, there is a lot of competition due to frontiersmen who are motivated by the better salaries compared to those in their countries, to look for work in Luxembourg. Many unemployed people – some 25 to 30% of job seekers – are long term unemployed (meaning they have been registered as such for over 1 year). It would be interesting to know more about the profiles of these people, especially to see if psychological and behavioural dimensions can give additional predictive validity over and above the more traditional demographic and socioeconomic parameters. Due to the fact that it is relatively easy to find a job in Luxembourg, it may be that psychological dimensions could have more impact on unemployment duration compared to regions where structural unemployment is more usual. Sverko et al. (2008) found, a contrario, that on a Croat sample, in a region where the unemployment rate was 18%, job search strategies and motivational dimensions were poor predictors of job finding.

2.2. Sample

The sample of the study was constituted of 384 (226 men; 158 women) newly registered unemployed persons with no known past of unemployment. The sample was representative of newly unemployed people, but not of the population of unemployed people in general. This choice is consistent with the general profiling idea, which should create tools that can be used at the beginning of unemployment. Subjects were surveyed between June 2005 and January 2006, after their first registration at the PES. An internal, non published study of the PES had shown that the period between the loss of a job or the end of school and registration is generally very short, so the date of registration is a good proxy for the beginning of unemployment. Subjects were volunteers, in fact very few people who were proposed the session – less than 10 – refused. The age of the unemployed people varied from 15 to 64 with a median age of 28.

2.3. Procedure

All the psychological dimensions tested in the study were measured by using existing or newly created questionnaires. The complete assessment tool had three types of items. The first group were general information questions (What is your gender? What is your nationality?). The second part was constituted of psychometric scales of personality and attitude like the GHQ12, the Rosenberg Self-Esteem Scale (RSES) or a scale of perceived stress. Finally, a test of non-verbal intelligence, the B53 of [Bonnardel \(1977\)](#), was also used in the third part. Items had been put in a computer version with the Quest Net+ software. This tool enabled sessions to be run on laptops at the PES. Subjects were presented one question on the screen at a time, sometimes with a paragraph of instructions. In most cases, one answer was required, and then the software presented the next item. For some questions, several answers were possible, so subjects had to click on an arrow at the bottom of the screen to ask for the next item. Subjects could only move on to the next item if they had answered the preceding one. This method has the advantage of ensuring there is no missing data, which is a major benefit, especially for psychometric scales. For some questions, which were not part of scales, subjects could click “I don’t know”, in order to avoid erratic answers. The only performance test, the B53, was given at the end of the sessions, to avoid the whole procedure being wrongly perceived as an intelligence test. Scales and questions were presented in the same order for all subjects. Sessions lasted in general from three quarters of an hour to one hour and a quarter. The study was presented as a voluntary and anonymous survey designed to understand the unemployed better. General instructions were given orally by a psychologist, after which the computer-session began.

Portable laptops of the “tablet PC” type were used, where subjects needed only to click with a stick on the tactile screen in order to give their answers; this was the case for most sessions. Comparative studies on computer anxiety have shown that this sort of display does not affect results in the evaluation of mood and intelligence, unlike when traditional PCs are used ([Tseng et al., 1998](#)). This is important, because it is a guarantee of equivalence of results with studies where paper-and-pencil versions of questionnaires were used. Additional comparative studies ([Overton et al., 1996](#)) have shown that this type of tool can also guarantee the construct equivalence with tests developed in a paper-and-pencil version. Nevertheless, some unemployed people who were more used to computers were allowed to answer the questions on a traditional laptop (with a mouse instead of a stick). This was done in order not to “infantilise” people who are at ease with these tools thereby making the data more trustworthy.

2.4. Measures

All the psychological dimensions tested were measured by using existing or newly created questionnaires. The published English, French or German versions of scales were translated into French, German and Portuguese by native speakers of these languages, in order to have three complete linguistic versions. This would allow the subjects to complete the questionnaires

in the language most familiar to them. Back-translations were made in order to verify the accuracy of the translations.

2.4.1. Personality

2.4.1.1. Openness. Openness was assessed through the Openness to ideas and Openness to actions (eight items each) subscales of the NEO PI-R ([Costa and McCrae, 1998](#)), because these two facets out of the six assessed by the NEO PI-R seem to be the best connected to job search attitudes and behaviours. The Openness to actions scale having given a poor internal consistency (alpha of 0.30) was eliminated from the analyses. Items were rated on a 5-point scale ranging from “strongly disagree” (0) to “strongly agree” (4).

2.4.1.2. Extraversion and conscientiousness. Extraversion and conscientiousness were assessed through the Extraversion and Conscientiousness scales (12 items each) of the NEOFFI ([Costa and McCrae, 1998](#)), a short five-factor personality omnibus test. Items were rated on a 5-point scale ranging from “strongly disagree” (0) to “strongly agree” (4).

2.4.2. Self-perception

2.4.2.1. Self-esteem. Self-esteem was assessed by the RSES ([Rosenberg, 1965](#)), a 10-item instrument largely used for assessing general self-esteem. The French version was the one translated by [Chambon et al. \(1992\)](#). The German version used was the one translated by [Ferring and Filipp \(1996\)](#). Items were rated on a 4-point scale ranging from “strongly disagree” (0) to “strongly agree” (3).

2.4.2.2. Self-efficacy. Self-efficacy was measured by the French adaptation of the General Self-Efficacy Scale (GSES). This scale has 21 items instead of 23 for the original instrument ([Sherer et al., 1982](#)). Items were rated on a 5-point scale ranging from “absolutely disagree” (0) to “absolutely agree” (4).

2.4.2.3. Core self-evaluations. Core self-evaluations were measured by the 12 items Core Self-Evaluations Scale (CSES; [Judge et al., 2003](#)). Items were rated on a 5-point scale ranging from “strongly disagree” (1) to “strongly agree” (5).

2.4.3. Adaptation and action orientation

2.4.3.1. Employment commitment. Employment commitment was measured by a 16-item scale constructed for the study, the Employment Commitment Scale (ECS). This scale was constructed because those which are usually used are tailored to people who have a job. Those designed for unemployed people ([Banks and Henry, 1993](#); [Jackson et al., 1983](#)) were too short (four or six items), but were used to create a 16-item scale. Example items are: “I feel I have a goal in life when I work” and “For me, work is not so important”. Items were rated on a 5-point scale ranging from “absolutely disagree” (0) to “absolutely agree” (4).

2.4.3.2. Perceived control of unemployment. Perceived control of unemployment was measured by three scales of six items

each constructed for the study, the Perceived Control of Unemployment Scale (PCUS), because no scales of this type existed beforehand. Based on the multidimensional theory of Levenson (1973), this scale distinguishes three control dimensions of the unemployment and job search situations: internal, chance and powerful others. The Multidimensional Health LOC (MHLC) Scales (Wallston et al., 1978) were used but the context of the items was changed. The scales were tailored specifically to unemployed people (the scales of Wallston are used with people who are ill or in good health), so they are adapted to a situation, which is (in principle) transitory and specific to particular domain. Example items for the three dimensions are: “It is my own behaviour which determines how soon I find a job”, “Luck plays a big part in determining how soon I will find a job” and “Having regular contact with the administration is the best way for me to find a job”. Items were rated on a 4-point scale ranging from “absolutely disagree” (0) to “absolutely agree” (3).

2.4.3.3. Social skills. Social skills were assessed by the 7-item Social Skills Scale (SSS; Ferris et al., 2001). Items were rated on a 7-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (7).

2.4.3.4. Coping. Coping was measured by the 15-item Cybernetic Coping Scale (CCS; Guppi et al., 2004), a shortened version of the 20 items and 40 items versions (Edwards and Baglioni, 1993). Coping is considered to be of five different types: Change the situation, Accommodation, Devaluation, Avoidance, and Symptom reduction. Items were rated on a 5-point scale ranging from “do not use at all” (1) to “use very much” (5).

2.4.4. Social support

Social support was measured by the two times six items Social Support Questionnaire (SSQ6; Rascle et al., 1997; Rascle et al., 2005; Sarason et al., 1987; Sarason et al., 1983). The scale assesses first social support and then satisfaction regarding this support. For the computer-version, the formulation of the items had to be changed: subjects were not asked to give the names of the support persons, only the number of people. A slight inflation could occur in the answers of the sample, compared to the norms, because it is more easy to give a number than to enumerate the relevant people. On the social support scale, subjects could indicate from zero to nine support persons. Items on the satisfaction scale were rated on a 6-point scale ranging from “very unsatisfied” (1) to “very satisfied” (6).

2.4.5. Mental health

2.4.5.1. Psychological distress. Psychological distress was measured through the 12-item GHQ12 (Goldberg, 1972), a widely used scale evaluating lack of well-being. Items were rated on a 4-point scale ranging from (0) to (3), with changing answers depending on questions. This Likert-scaling was preferred to the traditional bimodal scaling (0-0-1-1) advocated by Goldberg (1972), because it allows a better consideration of fine differences in subjects’ answers.

2.4.5.2. Social anxiety. Social anxiety was measured by the 24-item Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987; Yao et al., 1999). For feasibility reasons, only the Fear of Performance Scale was used, not the Avoidance of Performance Scale (Fresco et al., 2001). Items were rated on a 4-point scale ranging from “none” (0) to “severe” (3).

2.4.5.3. Perceived stress. Perceived stress was measured by the 14-item Perceived Stress Scale (PSS; Cohen et al., 1983). Items were rated on a 5-point scale ranging from “never” (0) to “very often” (4).

2.4.5.4. Depression. Depression was measured by the 20 items Center for Epidemiologic Studies – Depression Scale (CES-D; Radloff, 1977), a widely used instrument. Items were rated on a 4-point scale ranging from “rarely or none of the time” (0) to “most or all of the time” (3).

2.4.6. Cognitive ability

Non-verbal intelligence was measured by the shortened computer-version of the B53 (Bonnardel, 1977), a test of fluid intelligence. This version has 32 items instead of the 60 items of the original paper-and-pencil version. Results for each subject consisted of the number of correct answers provided in 10 minutes, ranging from 0 to 32.

2.4.7. Socioprofessional variables

Socioprofessional data were investigated by the same survey tool or anonymously extracted from the unemployment records of participants. The following data were collected: age, gender, marital status, dependents, nationality, initial education and training, profession, present income (including unemployment allowance if received), and monthly amount of loans to be reimbursed.

2.4.8. Dependant variable

The dependant variable is the employment status (employed – unemployed) 6 and 12 months after the beginning of the unemployment duration. These data were provided anonymously by the informatics department of the PES by using a random number which had been given to all the participating persons before the session. This procedure made it possible to have these data on nearly all subjects and to respect the legally protected anonymity of the unemployed people.

3. Results

A decision had to be taken for subjects who were on active labour market measures during these 6 or 12 months. These measures are mostly work placements which are subsidised by the State and which consist mostly of paid labour. People participating in these measures often stop looking for jobs on the labour market, despite the fact that they continue to be registered as unemployed people. Counting them as unemployed or as employed people would in both cases introduce important bias, so it was decided to remove them from the sample before

Table 1
Descriptive statistics of psychometric variables ($N = 384$).

Construct	Scale	Items	M	SD	α
Openness	NEO PI-R	8	20.6	4.8	0.73
Extraversion	NEOFFI	12	30.3	5.6	0.69
Conscientiousness	NEOFFI	12	34.3	7.0	0.86
Self-esteem	RSES	10	21.4	4.7	0.82
Self-efficacy	GSES	21	60.0	10.9	0.83
Core self-evaluations	CSES	12	41.6	6.3	0.78
Employment commitment	ECS	16	62.7	9.4	0.82
Perceived control of unemployment – internal	PCUS	6	10.8	2.7	0.60
Perceived control of unemployment – chance	PCUS	6	6.7	2.8	0.68
Perceived control of unemployment – powerful others	PCUS	6	7.8	2.8	0.57
Social skills	SSS	7	33.8	7.0	0.83
Change the situation coping	CCS	3	10.0	2.3	0.64
Accommodation coping	CCS	3	9.7	2.0	0.67
Devaluation coping	CCS	3	8.2	2.4	0.71
Avoidance coping	CCS	3	7.5	2.6	0.78
Symptom reduction coping	CCS	3	9.2	2.3	0.57
Social support	SSQ6	6	23.7	13.1	0.91
Satisfaction social support	SSQ6	6	27.9	6.3	0.92
Psychological distress	GHQ12	12	13.5	6.6	0.86
Social anxiety	LSAS	24	19.6	13.6	0.94
Perceived stress	PSS	14	23.9	6.9	0.75
Depression	CES-D	20	15.4	9.8	0.91
Non-verbal intelligence	B53	32	12.5	8.0	0.92

M: mean; SD: standard deviation.

Table 2
Descriptive statistics of socioprofessional variables ($N = 384$).

Continuous socioprofessional variables	Modalities	Mean (Standard deviation)
Age	15–61	31.1 (10.6)
Theoretical age of last education and training	13–25	18.1 (3.0)
Discrete socioprofessional variables	Modalities	%
Gender	Man	58.9
	Woman	41.1
Nationality	Luxembourgish	35.2
	Foreigner	64.8
Living	Alone	64.1
	In couple	35.9
Professional sector (first request at the employment agency)	Executive	26.1
	Employee	28.0
	Worker	46.0
Professional experience	Yes	54.0
	No	46.0
Duration of professional experience	0–6 months	61.4
	7–24 months	12.8
	> 24 months	25.8
Type of education and training	General	28.6
	Technical	71.4
Present revenue	≤ 500 Euros	33.2
	501–1000 Euros	15.2
	1001–2000 Euros	28.6
	> 2000 Euros	23.0
Reimbursement of loans	≤ 500 Euros	49.2
	501–1000 Euros	26.6
	1001–2000 Euros	22.0
	> 2000 Euros	2.3
Dependents	Yes	38.3
	No	61.7

the analyses. Seventy persons were removed at 6 months and 75 at 12 months.

Means, standard deviations and alpha coefficients of the different psychometric measures are shown in [Table 1](#). Results for socioprofessional variables are shown in [Table 2](#).

Three types of analysis are presented in order to verify the predictive power of variables: prediction of unemployment at 6 and 12 months for all subjects, and prediction of unemployment at 12 months for those who are still registered after 6 months. The latter allowed a more targeted investigation into the people who had more difficulty in finding a job. All analyses were done on the data collected at the first registration by comparing them with the data on the employment status of subjects, which were listed in the records of the PES, and this 6 or 12 months after registration.

3.1. Being unemployed 6 months after registration

3.1.1. Predictive validity of socioprofessional variables

A logistic regression was performed using the candidate variables on those persons who did not take part in an active labour market measure during the 6 months ($N = 314$). At that moment, 105 persons (33.4%) were unemployed and 197 (62.7%) had found a job. Twelve persons were no longer in the records of the PES – these files had been closed and no information was available on the employment status of these people – they were removed from the analyses. Statistical tests were based on the difference between the deviance of the complete model and the deviance obtained by removing one variable after the other from the model. Only significant variables were finally kept ([Table 3](#)). Age, loans, the theoretical age at last education and training (the theoretical age is used in order to neutralise effects of class retention), and receipt of allowances during the period were significant predictors of employment status after 6 months. The older a person is, the less chance s/he has of having a job at 6 months ($p < 0.001$). At age 20, the mean probability of being employed after 6 months is 0.76; at 30 years it is 0.63; at 40 years it is 0.48 and at 50 years it is only 0.32. A person who has loans to reimburse is more likely to be in a job after 6 months ($p < 0.01$). For education and training, the relationship is at the same time negative ($p < 0.05$) and curvilinear, people with little and those with a lot of education and training have more chance of being employed after 6 months ($p < 0.01$). Finally, receiving unemployment allowances gives a more negative prognosis of being employed ($p < 0.001$). In the model, the probability of being employed after 6 months is 0.48 for those who get allowances and 0.84 for those who don't get any.

In a further step, an estimation of the global predictive power of the preceding model was performed. The prediction of employment status (employed – unemployed) using the model was compared with the real status of the people after 6 months. Subjects were classified into two categories, using the equations of the model: those who are more likely to be unemployed and those who are more likely to have a job. By using this technique, the model could classify 74.4% of subjects correctly.

3.1.2. Additional predictive validity of the psychological variables

Then the psychological variables were introduced into the preceding model, in order to test if these have an additional predictive power to the socioprofessional variables ([Table 4](#)). Tests were also based on the difference between the deviance of the complete model and the deviance obtained if one variable after the other is removed from the model. Psychological variables which are significant in this model are: openness, conscientiousness, internal perceived control of unemployment, chance perceived control of unemployment, social anxiety and perceived stress.

Persons with more openness have more chance of being employed after 6 months ($p < 0.05$). People with more conscientiousness have less chance of finding a job ($p < 0.05$). Those with an internal control are more often employed ($p < 0.01$), and those with a chance perceived control are more often unemployed ($p < 0.05$). Concerning social anxiety, it was found that anxious people find a job more quickly ($p < 0.05$). Finally, the more a person is stressed, the more s/he is likely to be unemployed ($p < 0.01$).

A new estimation of the global predictive power of the preceding model was performed. The prediction of the employment status (employed – unemployed) using the model was compared with the real status of the people after 6 months. The model accurately classified 77.3% of the subjects. This is a non significant ($p > 0.05$) increase of 2.9 points compared to the model based on four socioprofessional variables. For subjects at 6 months after registration, there is no gain in prediction by using psychological variables.

3.2. Being unemployed 12 months after registration

Analyses were again performed on the data at registration, confronting them with employment status of subjects at 12 months ($N = 309$). Persons who took part in an active labour market measure during the 12 months were again removed. At that time, 89 persons (28.8%) were still unemployed and 207 (67.0%) had found a job. Thirteen subjects were no longer registered in the files of the PES – these are the same files which had been closed after 6 months plus one person – and were removed before the analyses.

3.2.1. Predictive validity of socioprofessional variables

A logistic regression was performed using the candidate variables ([Table 5](#)). Age, income and receiving unemployment allowances during the 12 months are significant predictors of employment status at 12 months. For age, a curvilinear relation was found, younger and older people having the most difficulty in finding a job ($p < 0.01$). For income, the relationship is also curvilinear, people with a small and with a high income being more likely to find a job during this period ($p < 0.01$). Finally, receiving unemployment allowances is an unfavourable prognostic of employment ($p < 0.001$). A new estimation on the predictive validity of the preceding model for employment status at 12 months was performed. The model was able to classify 72.5% of subjects correctly.

Table 3
Socioprofessional variables in the prediction of unemployment at 6 months.

	df	Deviance	AIC	LRT	p(Chi ²)
Age	1	296.97	308.97		
Loans	1	313.32	323.32	16.35	0.0001***
Theoretical age of last education and training (TALET)	1	305.35	315.35	8.38	0.0038**
(TALET/4 centred) ²	1	301.19	311.19	4.22	0.0400*
Allowances during the 6 months	1	304.08	314.08	7.11	0.0077**
	1	322.15	332.15	25.18	0.0001***

Variable	Value	β	IC 95% (Chi ²)	Level	Reference	Odds ratio (IC 95%)
Intercept		4.02	1.62;6.42			
Age		-0.06	-0.10;-0.03			0.938 (0.909;0.969)
Loans	No	-0.93	-1.59;-0.28	No	Yes	0.394 (0.205;0.759)
Theoretical age of last education and training (TALET/4 centred) ²		-0.11	-0.21;0.00			0.898 (0.809;0.997)
Allowances during the 6 months	No	0.63	0.15;1.11			1.875 (1.161;3.028)
		1.55	0.92;2.18	No	Yes	4.725 (2.519;8.863)

N = 314; *p < 0.05; **p < 0.01; ***p < 0.001.
df: degrees of freedom.

3.2.2. *Additional predictive validity of the psychological variables*

A further step in the statistical analysis was done by introducing the psychological variables into the model (Table 6). Those which were significant were core self-evaluations, change coping and intelligence. People with higher self-evaluations (p < 0.05) or those with more cognitive abilities (p < 0.05) were more likely to be employed at 12 months. Persons with more

change coping strategies find a job less easily between 0 and 12 months (p < 0.05).

A new estimation of the global predictive validity of the preceding model was performed. The prediction of employment status (employed – unemployed) using the model was compared with the real status of the people after 12 months. The model classified 73.8% of the subjects accurately, which is a non significant increase (p > 0.05) of 1.3 point

Table 4
Socioprofessional and psychological variables in the prediction of unemployment at 6 months.

	df	Deviance	AIC	LRT	p(Chi ²)
Age	1	256.98	288.98		
Loans	1	265.17	295.17	8.20	0.0042**
Theoretical age of last education and training (TALET)	1	264.39	294.39	7.41	0.0065**
(TALET/4 centred) ²	1	264.65	294.65	7.67	0.0056**
Allowances during the 6 months	1	267.92	297.92	10.94	0.0009***
Openness	1	282.74	312.74	25.77	0.0000***
Conscientiousness	1	261.53	291.53	4.55	0.0329*
Internal control	1	261.40	291.40	4.42	0.0355*
Chance control	1	263.64	293.64	6.67	0.0098*
Social anxiety	1	261.97	291.97	4.99	0.0255*
Perceived stress	1	261.38	291.38	4.41	0.0358*
(Perceived stress/4 centred) ²	1	265.27	295.27	8.29	0.0040*
	1	263.66	293.66	6.68	0.0097*

Variable	Value	β	IC 95%	Level	Reference	Odds ratio (IC 95%)
Intercept		6.574	1.990;11.159			
Age		-0.052	-0.089;-0.016			0.949 (0.915;0.984)
Loans	No	-0.973	-1.699;-0.247	No	Yes	0.378 (0.183;0.781)
Theoretical age of last education and training (TALET)		-0.169	-0.292;-0.046			0.845 (0.747;0.955)
(TALET/4 centred) ²		0.855	0.321;1.389			2.352 (1.379;4.011)
Allowances during the 6 months	No	1.733	1.029;2.437	No	Yes	5.657 (2.799;11.433)
Openness		0.088	0.006;0.169			1.092 (1.006;1.185)
Conscientiousness		-0.062	-0.120;-0.003			0.940 (0.887;0.997)
Internal control		0.166	0.035;0.296			1.180 (1.036;1.345)
Chance control		-0.152	-0.288;-0.017			0.859 (0.750;0.983)
Social anxiety		0.034	0.002;0.066			1.035 (1.002;1.069)
Perceived stress		-0.078	-0.132;-0.024			0.925 (0.876;0.977)
(Perceived stress /4 centred) ²		-0.085	-0.154;-0.017			0.918 (0.857;0.983)

N = 314; *p < 0.05; **p < 0.01; ***p < 0.001.
df: degrees of freedom.

Table 5
Socioprofessional variables in the prediction of unemployment at 12 months.

	df	Deviance	AIC	LRT	p(Chi ²)
Age	1	320.09	332.09		
(Age/4 centred) ²	1	320.49	330.49	0.40	0.5270
Income	2	328.85	338.85	8.76	0.0031**
Allowances during the 12 months	2	330.03	338.03	9.95	0.0069**
	1	334.69	344.69	14.61	0.0001***

Variable	Value	β	IC 95%	Level	Reference	Odds ratio (IC 95%)
Intercept		1.06	−0.07;2.18			
Age		−0.01	−0.04;−0.02			0.990 (0.960;1.021)
(Age/4 centred) ²		−0.06	−0.09;−0.02			0.946 (0.910;0.982)
Income	501–2000	−0.62	−1.24;0.00	501–2000	≤ 500	0.538 (0.290;0.999)
	> 2000	0.74	−0.10;1.59	> 2000	≤ 500	2.102 (0.902;4.901)
Allowances during the 12 months	No	1.19	0.57;1.82	No	Yes	3.297 (1.761;6.171)

N = 309; **p* < 0.05; ***p* < 0.01; ****p* < 0.001.
df: degrees of freedom.

Table 6
Socioprofessional and psychological variables in the prediction of unemployment at 12 months.

	df	Deviance	AIC	LRT	p(Chi ²)
(Age/4 centred) ²	1	291.68	309.68		
Income	2	295.92	311.92	4.24	0.0395*
Allowances during the 12 months	2	299.54	313.54	7.87	0.0196*
Core self-evaluations	1	310.03	326.03	18.35	0.0000***
Change coping	1	296.76	312.76	5.08	0.0242*
Intelligence	1	296.32	312.32	4.64	0.0312*
	1	297.99	313.99	6.32	0.0120*

Variable	Value	β	IC 95%	Level	Reference	Odds ratio (IC 95%)
Intercept		−0.589	−3.004;1.826			
(Age/4 centred) ²		−0.003	−0.083;−0.001			0.958 (0.920;0.999)
Income	501–2000	−0.725	−1.390;−0.060	501–2000	≤ 500	0.484 (0.249;0.942)
	> 2000	0.553	−0.362;1.468	> 2000	≤ 500	1.739 (0.696;4.341)
Allowances during the 12 months	No	1.422	0.745;2.098	No	Yes	4.144 (2.107;8.152)
Core self-evaluations		0.055	0.007;0.103			1.056 (1.007;1.108)
Change coping		−0.156	−0.300;−0.012			0.855 (0.740;0.988)
Intelligence		0.051	0.010;0.092			1.052 (1.010;1.096)

N = 309; **p* < 0.05; ***p* < 0.01; ****p* < 0.001.
df: degrees of freedom.

compared to the model with only the socioprofessional variables.

3.3. Being unemployed 12 months after registration for those still unemployed after 6 months

After 6 months, 160 of the 384 initial subjects (41.7%) were still unemployed. A similar analysis was performed for the period from 6 to 12 months. In other words, the predictive validity of the variables measured at the beginning of unemployment on the situation after 1 year was analysed for those who were still registered after 6 months (*N* = 99). Persons who took part in an active labour market measure during the 12 months were again excluded. This subsample comprises the persons who have more difficulty in finding a job; these people were still unemployed when more than half of the cohort was already employed. Out of this group of people not participating in an active labour market measure, 59 subjects (59.6%) were still unemployed after 12 months and 40 (40.4%) had found a job.

3.3.1. Predictive validity of socioprofessional variables

Results of the logistic regression using the candidate variables are shown in Table 7. Age and gender are significant predictors of employment status after 12 months. Older people have less chance of being employed after 12 months than younger people (*p* < 0.05). Men have a greater chance of being employed after 12 months than women (*p* < 0.05). In order to estimate the global validity of the preceding model, the prediction of the employment status using the model was compared with the real status of the people after 12 months. The model classified 62.6% of the subjects with accuracy.

3.3.2. Additional predictive validity of the psychological variables

Again, an additional analysis was performed introducing the psychological variables (Table 8). Openness, self-efficacy, social anxiety, symptom reduction coping and intelligence were the five variables which were significant. An open person is more at risk of being unemployed after 12 months (*p* < 0.05). For self-efficacy, the effect is positive and curvilinear, persons

Table 7
Socioprofessional variables in the prediction of unemployment at 12 months of subjects still registered at 6 months.

	df	Deviance	AIC	LRT	p(Chi ²)	
Age	1	124.04	130.04			
Gender	1	130.35	134.35	6.31	0.0120*	
		129.69	133.69	5.65	0.0175*	
Variable	Value	β	IC 95%	Level	Reference	Odds ratio (IC 95%)
Intercept		0.83	−0.72;2.38			
Age		−0.05	−0.10;−0.01			0.949 (0.909;0.990)
Gender	Male	1.13	−0.16;−2.10	Male	Female	3.094 (1.169;8.193)

$N=99$; * $p<0.05$; ** $p<0.01$; *** $p<0.001$.
df: degrees of freedom.

Table 8
Socioprofessional and psychological variables in the prediction of unemployment at 12 months of subjects still registered at 6 months.

	df	Deviance	AIC	LRT	p(Chi ²)
Age	1	96.91	112.91		
Openness	1	104.12	118.12	7.21	0.0072**
(Self-efficacy /4 centred) ²	1	101.41	115.41	4.50	0.0338*
Social anxiety	1	105.61	119.61	8.70	0.0032**
Symptom reduction coping	1	108.60	122.60	11.69	0.0006***
Intelligence	1	103.72	117.72	6.81	0.0090**
		106.02	120.02	9.11	0.0025**
Variable		β	IC 95%		Odd ratio (IC 95%)
Intercept		4.462	−0.171;9.095		
Age		−0.077	−0.137;−0.017		0.929 (0.872;0.983)
Openness		−0.152	−0.298;−0.005		0.859 (0.742;0.995)
(Self-efficacy /4 centred) ²		0.105	0.015;0.195		1.111 (1.015;1.215)
Social anxiety		−0.077	−0.128;−0.027		0.926 (0.880;0.974)
Symptom reduction coping		−0.319	−0.567;−0.072		0.727 (0.567;0.931)
Intelligence		0.113	0.035;0.191		1.119 (1.035;1.210)

$N=99$; * $p<0.05$; ** $p<0.01$; *** $p<0.001$.
df: degrees of freedom.

with medium self-efficacy being more likely to be employed ($p<0.01$). More socially anxious subjects have less chance of finding a job ($p<0.001$). Persons using more symptom reduction coping are more unlikely to find a job ($p<0.01$). Finally, unemployed people with more cognitive abilities are more likely to be employed at 12 months ($p<0.01$).

An estimation of the global predictive validity of the preceding model was performed. It was possible to classify 74.7% of subjects, which is a significant ($p<0.05$) improvement of 12.1 points compared to the model with only age and gender. In order to make the temporal dynamic of leaving unemployment more clear, all the results for the periods of 0–6 months, 0–12 months and 6–12 months are summarized in Table 9.

4. Discussion

The results of a 12-month longitudinal study of 384 newly registered unemployed people in Luxembourg was presented. Statistical analyses were performed on the predictive power of different measures on employment status. This was done at three different levels: evolution of employment status between 0 and 6 months, between 0 and 12 months and between 6 and 12 months. The last analysis refers only to people who were still

unemployed after 6 months. For the three types of analyses, the following pattern was used: first prediction with only the socio-professional variables, then addition of psychological variables in order to calculate the additional predictive power of the latter compared to the former. The aim of these analyses was to test if traditional profiling, as used until recently (Hasluck, 2004), could be improved by the addition of psychometric measures.

For the periods of 0 to 6 months and 0 to 12 months, a few socioprofessional variables were sufficient to accurately classify 74.4 and 72.5% of the subjects respectively. Adding psychological variables does not significantly improve this proportion. This means that for the profiling of unemployed people who are at risk of being jobless 6 or 12 months after their registration, socioprofessional variables are essential, but psychological variables play no incremental role. Finally, for the period from 6 to 12 months, age and gender allow classification of 62.6% of the subjects. Adding five psychological variables (openness, self-efficacy, social anxiety, symptom reduction coping, intelligence) improves this proportion in a significant way ($p<0.05$) by 12.1 points. Psychological dimensions play an additional role in predicting job finding only for persons who have more difficulty in finding one, whereas for those who find employment easily, these factors play no incremental role.

Table 9

Significant variables in the prediction of employment status at 6 months, at 12 months and at 12 months for subjects still registered at 6 months; proportion of correct predictions (IC 95%).

	0–6 months (N= 314)	0–12 months (N= 309)	6–12 months (N= 99)
Socioprofessional variables	Age Allowances Loans Training	Age Income Allowances	Age Gender
Correct predictions	74.4% (69.6;79.2)	72.5% (67.5;77.5)	62.6% (53.0;72.2)
Addition of psychological variables	Openness Conscientiousness Perceived control of unemployment – internal Perceived control of unemployment – chance Perceived stress Social anxiety	Core self-evaluations Change the situation coping Intelligence	Openness Self-efficacy Symptom reduction coping Social anxiety Intelligence
Correct predictions	77.3% +2.9 (NS)	73.8% +1.3 (NS)	74.7% +12.1*

* $p < 0.05$

4.1. Unexpected effects of some psychological variables

Several variables extracted from the literature review were found to be non significant. This is not astonishing as these studies had often produced mixed results. Out of the dimensions that were significant, some psychological variables showed unexpected effects compared to the initial hypotheses. Between registration and 6 months, more conscientious people were less able to find a job. More conscientious persons may be more demanding in their job choice. For social anxiety, the relation is also the reverse of that which was expected, socially anxious people found a job more easily. It could be that people who are more inhibited in their contacts and so in their job search activities compensate through some unknown mechanism.

Between the beginning of unemployment and 12 months, people who used more change coping had more difficulty in finding a job. It could be that it is easier to gain employment in the same job profile sector, therefore people who attempt to change may need more time, but again this is only a speculative hypothesis at this time.

Finally, for people who were still unemployed at 6 months, openness is associated with an increased risk of being jobless at 12 months. It could be that persons who are more open are also less focused, which may make it more difficult to attain a fixed objective, in this case finding a specific job.

4.2. Incremental validity of the psychological variables

It is, however, the incremental predictive validity of the psychological over and above the socioprofessional variables which is more important. The predictive validity of motivational and attitudinal variables on job finding has been put into question recently (Sverko et al., 2008). Employers decide to hire or not to hire job seekers based on general socio-professional characteristics (age, qualifications, former work experience, presentation, etc.), and not on the attitudes and motivations of people during their job search. Employers typically establish their choices on indicators, which are used as

“signals” or “indices”, and when the latter are “unfavourable” (age being above some limit, absence of school diploma, insufficient or too lengthy experience in the same job, etc.), they prefer other candidates. So, psychological attitudes have more effect on job search than on job finding, reinforcing what was found in the literature review presented in the introduction of this paper. For example, factors like self-esteem, social support or mental health would have a positive effect on the intensity of job search, but as the link between job search and job finding is weak, these psychological dimensions would have only a minimal effect on leaving unemployment (Sverko et al., 2008).

The present study confirms, and at the same time nuances this type of analysis. It shows that for the majority of unemployed people, motivational and psychological factors have no incremental effect over and above the traditional socioprofessional variables. For example, it was found in the proposed model that age and receipt of allowances are more significant at 6 and at 12 months than the psychological dimensions that were measured. This is the case despite the fact that six significant psychological variables were found at 6 months and three at 12 months. If the socioprofessional variables had not been considered first, an artificially inflated view of the importance of the psychological profile would have been found. Nevertheless, it was found in the present study that psychological factors play a notable additional role in job finding for those people who have more difficulty getting hired. There appears to be a negative cumulative interaction between unfavourable dimensions in job finding, an effect often found in other social fields (DiPrete and Eirich, 2006). This interaction would be between, on the one hand, a disadvantaged socioprofessional profile and on the other, certain psychological characteristics.

Could these results be explained by not having considered some important psychological variables which could have been missed? This is unlikely because the selection was based on a thorough review of the literature of the past 30 years, even if not all the studies are mentioned here.

4.3. Labour market as an explanation

Is there a theoretical model of these results? One plausible hypothesis is that it is the functioning of the labour market itself and the usual ways of hiring which explain the weak impact of psychological dimensions over and above the socio-professional ones. Labour markets have a constant turnover, which is mainly the result of the “creative destruction” of jobs: jobs are destroyed and others are created permanently (Cahuc and Zylberberg, 2004). Additionally, there would be first time job-seekers such as school leavers. How quickly people leave unemployment differs. On the labour market, there are different strategic actors, the most important being unemployed people and employers. Jobless people are in competition with each other, at least within a certain range of occupations, and they adopt work search strategies depending on the evaluation they have of their own situations. They contact potential employers who evaluate them and who decide to hire them or not. Depending on how well the job search and the recruitment procedure for the unemployed person goes, they will or will not receive a job offer. Economic studies have shown that the probability of accepting an offer if it is proposed is very high and near unity if the person knows the approximate salary in advance (McFadyen and Thomas, 1997). If unemployed persons accept the offer, they leave unemployment (Fig. 1). During this process, psychological dimensions could play a role in addition to socioprofessional dimensions, but for most unemployed people, the results suggest that they don't, neither at 6 months, nor at 12 months. To clarify this point, two types of cumulative effects can be distinguished.

4.3.1. Impact of incentive variables on job search

A first factor is the role that calculations done by the unemployed person (based on the evaluation of income, loans and savings) may have on the intensity of the job search and on leaving unemployment. The phenomenon is well known to both economists (Dormont et al., 2001) and psychologists (Wanberg et al., 1999). It may be due to the direct unincentive effect on the job search intensity of having money, but it may also be explained by the fact that the jobless person can wait longer before accepting a contract deemed interesting. A model based on purely economic calculations and which requires no additional psychological explanation is sufficient here (though it is not implied that there is nothing psychological in evaluating one's own interests, but this is a different debate [McFadyen and Thomas, 1997]). This causal link is represented in the Fig. 1 by a bold arrow between the incentive socioprofessional variables and job search.

In this study, there was no measure of job search intensity, which must be distinguished from job finding success, even if some link exists between them (Dormont et al., 2001; Wanberg et al., 1999). However, a link between incentive variables and job finding success was found; at 6 months, having loans to repay significantly increased the probability of finding a job. Receiving unemployment allowances decreased the probability of being employed at 6 or 12 months.

4.3.2. Impact of valued variables on recruitment

A second factor is the hiring process on the labour market (Eymard-Duvernay and Marchal, 1997), which works mainly on very standardized procedures and which, incidentally, unemployed people learn in seminars organised by the PESs. The first step is the writing of a resume, which details most of the socioprofessional dimensions like age, gender, initial education and training, professional experience, continuing training, etc. In most cases, the first contact between a job seeking person and a potential employer is through a resume, be it a spontaneous application or a reply to an announcement. The procedure remains the same even when recruitment is delegated to an agency. In cases where there is a direct first contact (for example, a sales person who enters a shop and asks if there are vacancies), it is still the resume that is requested. This document is generally provided with a motivation letter, which often presents the same information in a different way. Employers generally receive several resumes for a vacancy, amongst which they make a first selection, based essentially on simple criteria: age, gender, diploma, work experience, etc. Sociological studies on recruitment (Eymard-Duvernay and Marchal, 1997) have shown that many unemployed people who have a socioprofessional profile that is considered unfavourable are in fact screened out, and not even invited to a recruitment interview where they could put forward, for example, their human qualities, their life experience, their motivation, etc. This is particularly the case for people over a certain age limit. Age is often perceived as a handicap for several reasons: the employee will be more expensive, less flexible, perhaps less productive, sometimes more aware of work legislation and so less easy to handle, etc. It was found in this study that age was a statistically invalidating factor in the three analyses that were performed. Having more education and training is however a significant advantage in job finding during the first 6 months.

In Fig. 1, the causal link between these valued dimensions and the offer of a job is indicated by a bold arrow. This link is far more direct than for incentive socioprofessional and for psychological dimensions. When the valued dimensions are perceived as not good, the job seeker is generally not invited to an interview, and when they are perceived as satisfying, the interview serves to verify the “incremental” dimensions (motivation, interest in the job, personality, all these factors being more subjective and not being part of qualifications in a restricted sense). The causal effect of psychological dimensions may be mediated by the job search process as well as by the way the job seeker presents himself during a direct contact with the employer. In Fig. 1, these links are drawn by thin arrows in the box “intermediary time span”. As noted by Sverko et al. (2008), employers are those who decide to hire people, and they do so first based on socioprofessional criteria which are used to make a first selection between the resumes. After that, during the interview, which takes place only as a second step, criteria of the psychological profile that can be perceived during a direct contact may play some role (like personality, self-esteem, self-efficacy, psychological balance or mental health). For example, Cook et al. (2000) have found that the personality of candidates influences the outcome of selection interviews.

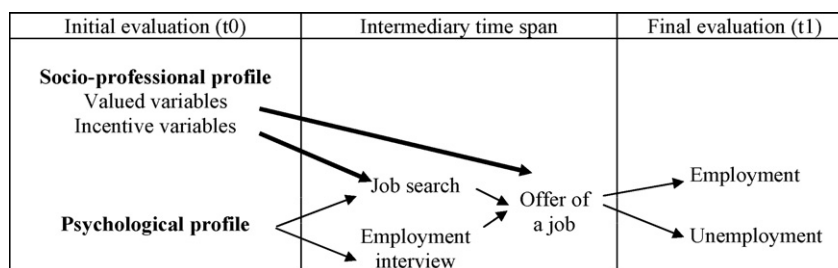


Fig. 1. Predictive model of employment status of unemployed people at t1, based on measures at t0.

The psychological profile has some effect on job search intensity and it may influence the outcome of selection interviews. It will pay off – meaning it will contribute to a job offer – only if it is supported by the socioprofessional profile required by the employer. An interesting personality will not make the difference in a job interview if job seekers are not even invited because they are considered too old or insufficiently qualified. A strong commitment to job search or good coping strategies will not pay off if the socioprofessional profile of the job seeker does not interest the employers.

4.3.3. Temporal dynamic of the unemployment duration

The temporal dynamic of unemployment has been studied widely in the economic literature (McFadyen and Thomas, 1997). Why do psychological factors have a greater influence over the passage of time? It was noted that the incremental effect of psychological variables between 0 and 6 months is negligible, economic explanations (incentive variables on the job search and valued variables on recruitment) are enough to explain differences in employment status at 6 months. During the period from 6 to 12 months, openness, social anxiety, self-efficacy, symptom reduction coping, and intelligence begin to make a statistical difference (Table 9), over and above age and gender which accurately classify 62.6% of job seekers. How is it possible to explain this result?

A cohort of unemployed people who access the labour market is submitted to a selection process: job seekers who have the most advantageous socioprofessional profiles are hired first. As time passes by, there is a growing proportion of people in the cohort who have more disadvantaged profiles. Therefore, the variables that play a role at 6 and at 12 months are not exactly the same, because the sample is no longer the same as a strong selection has taken place. People who are disadvantaged on the labour market, i.e., those who remain after a first selection, will need a better psychological profile to compensate, at least partially, for this handicap. In this study, some psychological dimensions begin to make a difference between 6 and 12 months on a competitive labour market. Those who have more self-efficacy, use fewer symptom reduction coping strategies, are less socially anxious and possess more cognitive abilities will find work more easily. Contrary to the initial hypothesis, being less open (meaning perhaps being more focused in one's actions) is also an advantage.

4.4. Specificity of the population

The hypothesis on a specific link between the favourable Luxembourgish labour market situation and the possible additional

role of psychological dimensions in job finding has not received any support from the data. For the majority of unemployed people, psychological variables do not make any difference in profiling. They only have some effect for those who have the most difficulty in finding a job. It is worth remembering that after 6 months, only 41.7% of the sample remained unemployed. In a study already mentioned (Sverko et al., 2008), which took place in a very difficult situation, with an unemployment rate of 18%, psychological variables were also poor predictors of employment. It is understandable that in circumstances where a lot of people are hired (like Luxembourg for unemployed persons being registered less than 6 months) or where few people are hired because there are simply no jobs, psychological profiles don't make much difference. The hypothesis of an inverted U relation could be proposed: as finding jobs becomes more and more difficult, the effect of psychological dimensions increases, peaks and then decreases. Obviously, more research would be necessary to clarify this point. These studies should simultaneously evaluate the link between labour market and conjuncture on the one hand and the weight of psychological dimensions on the other.

4.5. Ethical and practical issues regarding profiling

Profiling is linked to ethical and practical issues, which can be treated only briefly here. The first issue is the precision of the profiling instruments, which is regularly criticised (Georges, 2006). However, every “diagnostic” measure necessarily has false positives (here: unemployed people for whom long term unemployment is predicted but who find a job beforehand) and false negatives (here: unemployed persons for whom one predicts job finding, but who are still unemployed after the reference period). All that can be reasonably stated is that profiling does better than random, but it is necessary to be cautious. It is not even sure if profiling is better than the “intuitive” evaluations done by caseworkers in the PESs, even if this was the result of the Swiss study already mentioned (Lechner and Smith, 2007). An alternative, which has been proposed, is to use profiling as an aid for caseworkers who would be still free to make their own evaluations (Georges, 2006), with the risk of reintroducing some subjectivism.

Another issue is the unequal treatment that those who would be found “at risk” would receive. Whatever the variables taken into account, profiling would imply that certain job seekers would be proposed some assistance (whatever this would be) and that other people would not. This point of view calls for

several answers. Today, the policy of PESs already differentiate between candidates, based on the recommendations of European policy which foresees special treatment for those who are part of big groups (like young people or at risk groups). The European Employment Strategy, adopted in 1997, foresees the obligation to propose “a new start” to every unemployed person after 12 months (6 months for young people). So, there are already a certain number of support mechanisms in existence, independently of any individual profiling, and people who are not profiled as “at risk” are still catered for. Assistance proposed on the basis of profiling would be an additional individualised follow-up.

It is also obvious that the labour market in itself is not egalitarian; people with different profiles don't find jobs with the same degree of easiness. It must also be mentioned that a certain form of “profiling”, meaning different forms of help for people with different profiles, exists anyway in the PESs, but is often based on subjective evaluations which are not official. Wouldn't it be better to establish systematic profiling methods based on scientific studies, which could modulate the help given according to the particular difficulties people have in finding a job?

A last issue is that of possible stigmatisation of people labelled “at risk”. But are jobless people not more stigmatised by an unfavourable socioprofessional profile, a long period of unemployment or participation in an active labour market measure? A recent evaluation of these measures in Luxembourg has found that some of them are more ineffective than doing nothing. One explanation put forward for this result was stigmatisation (Zanardelli et al., 2006). Would a well-targeted early intervention done with some discretion by the PESs not be more beneficial to the person, especially if it could diminish the unemployment duration?

4.6. *Practical recommendations*

What practical recommendations can be inferred from the analyses? For Luxembourg, profiling based only on socio-professional factors would be useful at the beginning of an unemployment period. Additional psychological profiling is recommended only with those still registered after 6 months. A particular profile of people at risk of becoming long term unemployed should be given attention. These persons are in general older, more often women than men, more open to new ideas (but presenting a risk of dispersion), lacking self-efficacy, having more social anxiety, using symptom reduction coping strategies and having less cognitive abilities. A specialized intervention for people still unemployed after 6 months and presenting the whole or part of the aforementioned profile is recommended.

The present study also suggests intervention methods that could be tested with those people. Trying to improve intelligence does not seem to be a promising approach (Spitz, 1986), but it would be possible to intervene on the other psychological dimensions, which have been found significant. Psychological dimensions have the advantage that some intervention is possible and realistic, as opposed for example to age and gender. Social anxiety could be diminished through social competencies training, an excess of openness could be improved by help-

ing people to focus on realistic job possibilities. Training in self-efficacy (Eden and Aviram, 1993) and in effective coping strategies (Vinokur et al., 2000) have been used successfully with jobseekers by “helping people to help themselves” (Eden and Aviram, 1993).

4.7. *Strengths, limitations and directions for future research*

The objective of this article was to estimate the relative weight of socioprofessional and psychological variables in job finding. It has the empirical interest of having simultaneously analysed different psychological variables by measuring their effect over and above socioprofessional dimensions. Few studies analyse the relative influence of these two classes of predictors. For example, the review by McFadyen and Thomas (1997) confronts the economic and psychological models of job search behaviour, but does not present data, which evaluates the respective contribution of both. The procedure of the present study consisted of first entering the socio-professional variables (directly pertinent on the labour market) into the statistical model and then adding psychological dimensions. This avoids producing an overestimation of the latter in the job finding process as can be found in many studies. This procedure is also pertinent both from the perspective of profiling and of applied psychology. It is more sensible to first use the data that are easily accessible like age, gender, education and training, allowances (these are already in the file of the unemployed person) than to organise the collection of data using psychometric scales. As shown in the discussion, this is also the way things happen on the labour market: the job seeker first needs the professional profile which is suited to the job, and secondly, the psychological qualities which could be helpful. The tested variables are taken from a vast literature search, which narrows the possibility that some important dimensions have been forgotten. The results of the study also provide a profiling model, which could be implemented in the PESs without significant cost, as well as proposals for psychological work that could be carried out with people who have not found a job after 6 months.

Limitations should also be mentioned. First, all psychological measures are self-evaluations and therefore subject to possible bias. The dichotomised dependent variable (unemployed – employed) does not consider the whole range of the job variability, like for example job satisfaction, type of contract, type of work, quality of the job (Kanfer et al., 2001). This would need a quite different type of study, as for legal reasons, these data are not registered in the files of the Luxembourgish PES. The model constructed in this study applies only to residents working in Luxembourg. Frontiersmen, who are one third of the national work force, must register in the PESs of their respective countries if they lose their job. Generalisation of the model to other populations of unemployed people is also not automatic, because the Luxembourgish labour market is very specific (nearly full employment, net job creation, important use of frontiersmen). For evident reasons, the economic conjuncture could not be considered – comparisons at different time periods would have been necessary – but they could also have changed the results. The study was done before the financial crisis, in a period when the

conjuncture was very good, though this did not prevent the unemployment rate rising slowly but gradually during the 5 preceding years.

As the international practice of profiling in the PESs is limited to date to socioprofessional data (Hasluck, 2004), and since at the same time critics raise the issue of the precision of the models (Debauche and Georges, 2007), the results of this study would merit a replication in other sociopolitical contexts. From a more theoretical point of view, the hypothetical causal links drawn in Fig. 1 could be tested simultaneously in a future study. In this one, no data have been collected about the job search intensity of the unemployed people, about what happens in a selection interview and about hiring decisions that are made by employers. The big difficulty consists in the simultaneous and precise evaluation of these three moments which are “black boxes” in the present study. It would be possible to build on research about job search intensity (Saks, 2006; Côté et al., 2006), psychological interactions which take place in employment interviews (Liden et al., 1993) and on hiring decisions taken by employers (Caldwell and Burger, 1998; Cook et al., 2000; Dunn et al., 1995).

Conflicts of interest

None.

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