HEALTH AND UNEMPLOYMENT: THE ROLE OF PERSONALITY TRAITS

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Abstract

In this paper, a combination of personality traits is used as an aggregate measure of resilience; this resilience measure is then used to study whether people react differently to unemployment.

Unemployment has been demonstrated to negatively affect both life and health satisfaction. But what about resilience? If resilience distinguished the individuals’ ability to react and bounce back from adverse events, some characteristics might make people more resilient against unemployment. This paper assumes that some personality trait might constitute a resilient personality that protects them against the negative effect of unemployment. Specifically, Openness to Experience, Emotional Stability and Internal Locus of Control are used as proxies of resilience scales’ factors.

To observe the mediating role of resilience against unemployment, this study observes the level of life satisfaction and health satisfaction before, during and after unemployment, and how this process is determined by the score in personality resilience. Results show the effect of unemployment on health is delayed on time (t+2), where resilient individuals are significantly less affected. Similarly, the negative effect on life satisfaction is visible during unemployment (t0), but only for low-resilience individuals.
1. Introduction

In this paper I analyze the effect of unemployment on health and life satisfaction, and how this effect is mediated by personality traits. My claim is that certain personality traits can be used as proxies of resilience factors against adverse life-events, such as unemployment. Picking from the psychological literature, I built a resilience measure by aggregating three different personality traits. This way, I could overcome a common problem of psychological studies, namely the small size of the sample. By creating a single measure of resilience on the GSOEP (the German representative survey), I could extend this measure to the entire German population. The SOEP has a very rich supply of information about personality traits. It contains the Big Five – the personality traits that have already been widely examined in the economic literature – and other traits that can be grouped within the category of life attitudes. Furthermore, by exploiting the longitudinal nature of the German Socio-Economic Panel (SOEP) and observing only the change in health over time, I account for some potential endogeneity of unemployment.

I assumed that certain personality characteristics can be used as proxies for factors of resilience that are used in psychological resilience scales, such as tolerance or acceptance of change (see theoretical framework). Also, I selected those resilience factors that I consider useful to contrast with unemployment. My resilience scale summarizes all those characteristics that enables the individuals not to be overwhelmed by the situation, to believe that they are able to react to it positively, and not to be afraid of change. Following Powdthavee (2016), I tested the scale by examining how well it explains the variation in health due to unemployment. I expected high scores to significantly predict a smaller loss and a faster recovery. I observed the entire adjustment process, taking into consideration both the anticipation phase starting two years before the event, the year when the workers lose their job, and two years after.

The potential effect of individual resilience on unemployment is important for both psychologists and economists. Since it has already been demonstrated that unemployment affects well-being and health (see Winkelmann & Winkelmann, 1995), it is important for social well-being to understand how people can cope with it. On the other hand, it is useful to understand which characteristics make people stronger when confronting economic adversities, especially if we believe that some personality traits are still malleable in early childhood (Borghans et al., 2008; Comi et al., 2019; Soto et al., 2011).
2. Literature review

Health and unemployment


Some researchers have underlined the importance of considering the potential reverse causality between health and unemployment (Schmitz, 2011). First, sick individuals might be more likely to lose their jobs; second, there are possible confounding factors with other individual characteristics, both observable and non-observable (Lundin et al 2010) or contextual characteristics (Bambra and Eikemo 2009).

Some authors have pointed out that the unemployment’s negative consequences on health manifest after a certain period of time rather than immediately (Stauder, 2017). It is plausible, indeed, that unemployed people can’t afford the same level of health costs after losing their source of income, and that this financial penalty progressively undermines their health (Bartley 1994). A second approach tend to explore the social consequences due to unemployment. Unemployed individuals suffer from both from social isolation for not being involved in the social interactions of work, and to the social sigma related with it. It has been demonstrated that, where social norms on unemployment are stronger, unemployed ones suffer more (Chadi, 2014, Clark, 2003). Social isolation and stigma are likely to affect health, especially if prolonged over time. Therefore, unemployment seems to affect individuals on three levels: social, financial and psychological.

Personality traits are expected to have an important role in the adaptation process during and after unemployment. People with a more balanced and stable personality, for example, are expected to be able to cope better than individuals with less resistance to stress. A resilient personality is expected to make individuals more resistant both from the social and psychological points of view. Also, by accelerating the re-employment process, if influences the financial aspect.
Personality traits and labour market

The role of personality traits (especially the big five and locus of control) in the labour market has already been widely explored. In this paper, I use two of the Big Five traits (emotional stability and openness) and the locus of control.

Locus of control describes the expected effect that an individual’s actions have on the world (Rotter, 1966). The attitude of people with an external locus of control is to perceive that what happens to them does not depend on their actions, but on fate, destiny, or anything external over which they have no control. On the other hand, people with an internal locus believe that their actions can actively influence their environment, which translates in a higher pro-activity (Weiner, 1972). Emotional stability is the capacity to process emotions and feelings, both positive and negative, in a constructive way rather being overwhelmed by them, and it is generally associated with being sensitive (Borghans et al, 2011). People with low levels of emotional stability (‘neurotic’) are anxious and cannot deal with stress. They tend to perceive the environment as threatening and are more likely to suffer from pathological emotional disorders (Barlow et al., 2014). Finally, openness defines open-minded people who like to try new experiences, ideas, and feelings (Corr & Matthews, 2009) and it is also correlated with intelligence and creative thinking.

In general, high scores in these traits are correlated with positive labour market outcomes, such as employment, wages, and type of job. Locus of control is considered one of the best predictors of all these outcomes (see, for example, Cobb-Clark, 2015; Fletcher, 2013; Ham et al., 2013; Heineck & Anger, 2010). Similar results have been found for emotional stability (Fletcher, 2013; Nyhus & Pons, 2004) and openness (Muller & Plug, 2006).

Most of these personality traits are also associated with positive outcomes in the case of unemployment. People with an internal locus of control who lose their job commit more to finding a new one (because they believe their efforts will be rewarded) and this pro-activity translates into higher chances of re-employment (McGee & McGee, 2016). Periods of unemployment also seem to be shortened by emotional stability (Uysal & Pohlmeier, 2011; Viinikainen & Kokko, 2012). There is not much research on how personality traits reduce or (increase) the negative effect of unemployment on life satisfaction or health. Other Big Five have been found to have an effect. Boyce et al. (2010) observed that conscientious people, who generally care more about their career and job realisation, suffer more from
unemployment. Hahn et al. (2015), confirmed the negative effect of conscientiousness after unemployment, and the positive effect of extraversion.

3. Theoretical framework

The claim of this research is that personality traits can be used as proxies of resilience factors, such as competence and control, and that, therefore, they can predict adaptation against adverse life events, as unemployment. In other words, a specific combination of personality traits constitutes a resilient personality against unemployment.

For the American Psychological Association, resilience is 'the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress — such as family and relationship problems, serious health problems or workplace and financial stressors. It means "bouncing back" from difficult experiences'. (APA, 2002).

The earlier research on resilience focused on observing whether certain individuals were resistant to negative events that happened in their lives. Bonanno (2007), for example, found that only a small portion of the subjects he observed were severely affected by disasters like the 11th September terrorist attack, and few people were affected by the loss of a close person (2005). Similarly, Mancini et al. (2009) reported that most of the German adults surveyed were not strongly affected by the death of a close person. In economic literature, the underlying theory is that every individual has a specific and stable level of well-being, which can be perturbed by shocking events. After the event, the individual starts to adapt and, after certain time, he or she is generally able to bounce back to the previous ‘baseline’ level and complete the adjustment process (Clark, 2004). Clark examined the effect of six shocks (unemployment, dismissal, having a child, marriage, divorce, and widowhood) on life satisfaction, and he observed a complete recovery after five years for most of them (apart from unemployment for males).

Instead of focusing on who is resilient and who is not, a second approach consist of exploring which characteristics make people resilient. This literature usually stresses the role of ‘protective factors’, or ‘assets’, namely characteristics that enable resistance to adversity and which underlie the process of adaptation (Windle, 2011). Protective factors are identified across three levels of functioning: individual (like psychological characteristics, skills, socio-economics status, etc.), social (like family cohesion, parental support) and community/society (e.g. support systems such as institutional and economic factors). Also,
‘competence’ is the ability to enable these protective factors, and it is based on the belief of being effectively able to cope with events. Considering the role of the protective factors, a more comprehensive definition of resilience is: ‘the process of effectively negotiating, adapting to, or managing significant sources of stress or trauma. Assets and resources within the individual, their life and environment facilitate this capacity for adaptation and "bouncing back" in the face of adversity’ (Windle, 2011, p. 163).

Protective factors can be of a different nature. Clark and Lelkes (2005), for example, found out that being religious made people more resistant against adversities: these people experience smaller drops in life satisfaction. Boyce and Wood (2011) demonstrated that agreeable people recover faster from a disability, while disagreeable ones need extra support to bounce back. Similarly, Powdthavee examined the role of locus of control (2016) and childhood characteristics (2014) as predictors of resilience against adulthood shocks, and he found out the people with an internal locus of control suffer less from some adversities, and that a few childhood characteristics (such as having had a good relationship with the father) make people more able to cope with unemployment.

Resilience scales usually tend to generate their own protective factors and they cover different areas (see table 1 in section 2). In a more operational way, protective factors can be grouped into three categories: personal time-varying characteristics (such as number of friends, relationship with family, skills, etc.), personal stable characteristics (like personality traits) and socio-economic characteristics. In this research, I focused on the second group: psychological characteristics which are stable over time.

My main assumption is that personality traits can be used as proxies for factors of resilience. The most used scales in psychology generally assess resilience through underlying factors, as shown in Table 1. Recently, some researchers have pointed out the strong correlation between personality traits and resilience (for a recent meta-analysis, see Oshio et al., 2018). It has been demonstrated that resilience is negatively correlated with neuroticism and positively correlated with the other Big Five. Waaktar and Torgersen (2010) even sustain that the Big five outperform resilience scales in predicting adjustment to adversities in adolescence, suggesting that resilience may be described in terms of a profile within the big five factor model. I follow this new stream of findings and use personality traits to build a measure of resilience.
The first step was to analyze six among the most used resilience scales, focusing on their theoretical frameworks and the factors created to measure resilience. Table 1 shows the factors used in the six scales to measure individual resilience. My aim was to use individual personality characteristics as proxies for these underlying factors. My second step was to explore all the personality traits contained in the SOEP in order to pick, among them, the ones that can be used as proxies of resilience factors (for a summary of all the scales present in the SOEP, refer to the most recent SOEP Scales Manual, 2017).

Following a commonly accepted classification (Windle, 2011), resilience can be subgrouped in three categories: individual, social and familiar. I focus on the first one. The last column of table 1 shows which resilience factors fall in this category. Finally, Table 2 shows which personality traits and attitudes were used as proxies for the resilience scale.

### Table 1

<table>
<thead>
<tr>
<th>RESILIENCE SCALES AND CORRESPONDING FACTORS</th>
</tr>
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<tbody>
<tr>
<td>CD-RISC</td>
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<tr>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Tenacity and personal competence</td>
</tr>
<tr>
<td>Social competence (emo. regulation)</td>
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<tr>
<td>Self-confidence and tolerance</td>
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<tr>
<td>Acceptance of change</td>
</tr>
<tr>
<td>Control/personal structure</td>
</tr>
<tr>
<td>Spirituality</td>
</tr>
<tr>
<td>Social support</td>
</tr>
<tr>
<td>Family coherence</td>
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<tr>
<td>Goal-setting efficacy</td>
</tr>
<tr>
<td>Meaningful life</td>
</tr>
<tr>
<td>Perseverance</td>
</tr>
<tr>
<td>Equanimity</td>
</tr>
<tr>
<td>Existential aloneness</td>
</tr>
<tr>
<td>Planning behaviour</td>
</tr>
<tr>
<td>Coping abilities</td>
</tr>
</tbody>
</table>

1 The scales I used are: the Connor-Davidson Resilience scale (CD-RISC) (Connor & Davidson, 2003), the Brief Resilience scale (BRS) (Smith et al, 2008), the Resilience scale for Adults (RSA) (Friborg et al, 2003), the Wagnild and Young’s resilience scale (1993), the Scale of Protective Factors (SPF) (Ponce-Garcia, Madwell & Kenninson, 2015) and the Ego-Resilience scale (Block & Kremen 1996).
As shown in table 2, I used emotional stability, openness, and locus of control as proxies for the individual component of resilience. In this conceptualization, individual resilience summarizes all the personality characteristics necessary to activate practical resources and face unemployment. Whenever individuals face unemployment, they necessarily are forced to change a previous routine and need to activate different resources to find a new equilibrium. As per many other adverse events, unemployment can be overwhelming and trigger a feeling of panic.

Table 2

INDIVIDUAL RESILIENCE:
PERSONALITY TRAITS AND THEIR CORRESPONDING FACTORS

<table>
<thead>
<tr>
<th>PERSONALITY TRAITS AND ATTITUDES</th>
<th>RESILIENCE FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional stability</td>
<td>Coping abilities</td>
</tr>
<tr>
<td>Openness</td>
<td>Tolerance</td>
</tr>
<tr>
<td>Locus of control</td>
<td>Acceptance of change</td>
</tr>
<tr>
<td></td>
<td>Meaningful life</td>
</tr>
<tr>
<td></td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>Competence</td>
</tr>
<tr>
<td></td>
<td>Goal setting</td>
</tr>
</tbody>
</table>

Note: ‘Personality traits and attitudes’ contains the Big Five and the other attitudes used; ‘Resilience factors’ lists the corresponding resilience factors.

The capacity to face adversities is the core definition of resilience itself: it is what makes people strong enough to resist negative events. When resilience scales measure this characteristic, they generally refer to it simply as ‘resilience’, rather than to an underlying factor². The Brief Resilience Scale (BRS), for example, claims to directly measure the resilience construct (Smith et al., 2008). In Table 1, I refer to this factor as ‘coping abilities’.

² According to Oshio et al. (2018) resilience scales follow two main approaches. The ‘ego-resilience’ scales focus on determining individuals’ coping abilities. In this way, they tend to assess resilience ‘directly’ by evaluating how people are prepared to face events. The ego-resilience scale and the brief resilience scale follow this approach. The second approach focusses on those characteristics that make people more or less resilient (namely the ‘protective factors’). In this view, resilience is assessed indirectly. In Table 1, the factor ‘coping abilities’ refers to the first way of measuring resilience, namely the direct one. Generally, items of this type ask direct questions of the ability of the individual to cope with negative events (like how difficult it is to face it, how long it takes to recover, etc.).
Other scales measuring coping abilities are the ego-resilience scale (Block & Kremen, 1996), and the CD-RISC (Connor & Davidson, 2003), which contains a factor supposed to measure 'trust in one’s instincts, tolerance of negative affect, and strengthening effect of stress' (ivi, p.80). I proxied these factors through emotional stability, which measures the capacity to face events and stressors without rapid change of mood or being overwhelmed. In particular, one facet of emotional stability (‘anxiety vs. calm’) focuses on the ability of not getting upset or too worried by things that go wrong (APA, 2007; Chaturvedi & Chander, 2010). Observing reaction to unemployment in a temporal scale, emotional stability represents the first necessary trait: it prevents people from ‘freezing’ and panicking, and then supports them to react positively. For a more biological perspective, Rosen & Schulkin (1998) call ‘normal fear’ the condition in which danger elicits a functionally adaptive behavior to facilitate defensive responses, while ‘pathological anxiety’ is the condition of an ‘exaggerated fear state in which hyperexcitability of fear circuits is expressed as hypervigilance and increased behavioral responsivity to fearful stimuli’. When the stress level overcomes the threshold of an adaptive behavior, the individual may no longer be able to react to the situation (for example, they may give up in looking for a job). I expect emotionally stable individuals to be more likely to respond to stress with more adaptive behavior, and to have a higher threshold level of pathological anxiety.

Similarly, people with high level of openness are less likely to be overwhelmed by job loss. People who enter unemployment may be forced to get out of their ‘comfort zone’ and to adapt to new conditions. We expect the resilience factor ‘acceptance to change’ (McCrae & Costa, 1997) and the personality trait openness (APA, 2007) to describe both the aptitude of not seeing change as a threat, but as an opportunity to grow. For example, it has been demonstrated the open-minded people tend to have higher levels of job mobility (Van Vianen et al., 2003), and a constant need of new experiences. I also related openness to the factor ‘meaningful life’ (Wagnild & Young, 1993). This resilience factor describes the feeling of having a purpose and being active and interested in things. Similarly, openness has been linked with life satisfaction and wisdom (Le, 2011) and with a higher engagement in leisure activities (Ihle et al., 2016). I expect open people to be active in different activities, and not only their job, which protects them in the case of unemployment.

Once recovered from the psychological shock of job loss, a person needs to activate practical resources to face the situation: looking for a new job, contacting people, doing
interviews, and so on. The resilience factors I used to summarize the capacity of activating the necessary resources are ‘competence’ and ‘control’ (or personal structure) (Connor & Davidson, 2003; Smith et al., 2008). Competence is defined as the ‘the capacity or motivation for, or process of effective adaptation, and enables adaptive use of resources within and outside the person. It is based on the beliefs of perceived effectiveness in adaptation and arises from interactions with the environment’ (Windle, 2011). Similarly, ‘personal structure’ and ‘control’ describe the feeling of (and the desire to be in) control of things. I linked these factors to the locus of control. People with an internal locus of control believe that what they do will effectively influence the external world, and that their action will have a result that depends on them rather than on fate or luck. For example, as demonstrated by Cobb-Clark and Tan (2009), people with an internal locus of control commit more to looking for a job when unemployed, which translated into higher rates of re-employability.

To summarize, my measure of individual resilience encompasses all the personality characteristics that enable people to activate what they need to face job loss. It doesn’t consist of the practical resources themselves, but of what it takes to activate those resources. It groups the personality and attitudinal characteristics that make it possible.

A last note on the resilience scale relates to the reason why I omitted conscientiousness. I expected these traits to have ambiguous effects on the adaptation to unemployment. Conscientious people have been demonstrated to suffer more from the experience of unemployment, due to their concern about social rules and the importance they attach to career (Boyce et al, 2010; Hahn, 2015). On the other hand, I also expected them to resolve unemployment faster. As a result, conscientiousness is hypothesized to increase the loss in well-being after unemployment and, at the same time, is likely to be associated with a steeper recovery. Therefore, if the three traits used are supposed to act both on the emotional level (not feeling overwhelmed by unemployment) and the practical one (actually finding a new job), conscientiousness is expected to influence them differently.

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3 Note that, conceptually, competence is closer the (internal) locus of control than personal structure/control. Both internal locus of control and competence describe the belief of being able to influence the course of events. On the other side, personal structure specifically describes the feeling of being in control. That is, people who believe they can influence things may not feel in control in that situation, or vice versa. However, I expect this to happen rarely, and the two constructs to be highly correlated.
(positively on the practical side but negatively on the emotional one). Therefore, its effects should be analyzed first separately.

4. Data and methods

Data and sample

The data used in this study came from the German Socio-economic Panel (SOEP), a longitudinal national-representative survey started in 1984. The SOEP survey is one of the few longitudinal datasets that collect information on psychological, social, and economic characteristics of households and individuals that is representative of the entire population.

I focused only on those individuals within working age (from 20 to 65) of which I had full information on personality traits. Also, the GSOEP started recording the reason why job ended from wave 18 (year 2001). Table X shows the frequencies of the 5 types of unemployment I considered, which lead to a final sample of 12759 individuals (5975 men and 6784 women).

Table 3 – How job terminated

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] Place of Work Clo</td>
<td></td>
<td>355</td>
<td>372</td>
<td>727</td>
</tr>
<tr>
<td>[2] I Resigned</td>
<td></td>
<td>518</td>
<td>1,025</td>
<td>1,543</td>
</tr>
<tr>
<td>[3] Dismissed by Empl</td>
<td></td>
<td>1,222</td>
<td>1,027</td>
<td>2,249</td>
</tr>
<tr>
<td>[5] Temporary Employment</td>
<td></td>
<td>772</td>
<td>897</td>
<td>1,669</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3,307</td>
<td>3,812</td>
<td>7,119</td>
</tr>
</tbody>
</table>

Personality traits and resilience

I used locus of control, openness and emotional stability to build an aggregated measure of resilience. The Big Five and the locus of control were introduced together in the SOEP in 2005, and they are measured in regular intervals (4 or 5 years).

To compute the value of each personality trait, I calculated the average considering all the values available for each individual in all waves, and finally I matched the result with all
the waves with no information. By using the values from all the waves, I aimed to reduce measurement error. A person could pick a different number from the ‘real value’ due to situational and contingent reasons; this divergence should have decreased the more observations I took into account.

Table 4 shows descriptive statistics of the three traits. They all present normal distributions with standard deviation around 1.

**Table 4 – Personality traits**

<table>
<thead>
<tr>
<th></th>
<th>Variable</th>
<th>Sex</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>Male locus2</td>
<td>4.732.094</td>
<td>.9247661</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>emostab2</td>
<td>444.033</td>
<td>1.115.016</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>openness2</td>
<td>4.760.558</td>
<td>107.808</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>[2]</td>
<td>Female locus2</td>
<td>4.643.185</td>
<td>.9130034</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>emostab2</td>
<td>391.314</td>
<td>1.147.884</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>openness2</td>
<td>4.839.867</td>
<td>1.085.335</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

To build the resilience measure, I computed the mean of the three traits, per each individual separately. For the analysis, I then divided the overall distribution of resilience in equal quartiles (see, for example, Buddelmeyer & Powdthavee, 2016). To study the effect of resilience, I observed the impact of unemployment on health and life satisfaction, and whether this impact is different for people belonging to the highest VS the lowest quartile.

**Descriptive statistics**

Table X shows descriptive statistics of the sample. The statistics are extrapolated from the year in which individuals lose their job. Most of the sample is composed by partnered individuals (65%), while 40% of the don’t have kids. Also, most of the individuals in the sample have a permanent contract (80%) and work full time.
Table 5 – descriptive statistics

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td>[1] Male</td>
<td>48,419,916,12</td>
</tr>
<tr>
<td></td>
<td>[2] Female</td>
<td>51,580,083,88</td>
</tr>
<tr>
<td><strong>In a relationship</strong></td>
<td>No</td>
<td>50,982,102,07</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>49,017,897,93</td>
</tr>
<tr>
<td><strong>N. children</strong></td>
<td>0</td>
<td>25,700,759,94</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>19,550,683,11</td>
</tr>
<tr>
<td></td>
<td>2 or more</td>
<td>54,748,556,95</td>
</tr>
<tr>
<td><strong>Permanent contract</strong></td>
<td>No</td>
<td>20,638,677,8</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>79,361,322,2</td>
</tr>
</tbody>
</table>

The SOEP also contains direct information on health and life satisfaction. The one on health asks respondents: ‘How satisfied are you with your general health?’ (response scale 1-5) while the one on life satisfaction asks: ‘How satisfied are you with your life, all things considered?’ (response scale 1-10). Both variables are measured every wave, which makes them optimal to measure their evolution over time.

Graph 1 and 2 show the trend of health and life satisfaction before and after the occurrence of unemployment. Evidently, there is not any significant pattern before unemployment. However, health seems to progressively decrease after losing job, while life satisfaction seems affected only during unemployment.

**Econometric Model**
Following Clark (2008), I consider both the anticipation and the lag effect of unemployment on health and life satisfaction. Given that unemployment represents an endogenous variable, with the predictor variable (personality traits) correlated with the error term, pooled regressions and random effects are likely to return biased estimation (Carmen and Trivedi, 2009). Therefore, I removed time constant unobserved heterogeneity through fixed effects regressions, and estimate an individual fixed-effect regression on this model:

\[ Y_{it} = \alpha_i + \beta X_{it} \sum_{q=1}^{4} \left[ \theta_{q1}(U*Res_{q})_{1,i(t0)} + \theta_{q2}(U*Res_{q})_{2,i(t0)} + \theta_{q3}(U*Res_{q})_{3,i(t+1)} + \theta_{q4}(U*Res_{q})_{4,i(t+2)} \right] + \mu_i + \epsilon_{it} \quad (1) \]

Here \( Y_{it} \) represents health or life satisfaction of individual \( i \) at time \( t \), \( \epsilon_{it} \) is the time-variant error term and \( \mu_i \) the time-constant one, namely the individual fixed effect. The vector \( X \) includes the following time-varying covariates: age, income, the starting or ending of a relationship and the birth of a baby, and time dummies to control for common shocks occurring in any given year. As demonstrated by Clark (2008), some of these events have a strong and durable impact on people’s well-being. Getting married and having a baby have a strong and positive impact on well-being, while a new-born is followed by a negative effect in the following years. Age has been demonstrated to have a U-shaped effect on happiness and has been associated with higher levels of well-being for the elderlies, with a decline in the middle (Schwandt, 2016).

The model observes not only the immediate effect of unemployment on health (\( \theta_3 \)), but also the anticipation effects (\( \theta_1 \) and \( \theta_2 \), that correspond to 1 and 2 years before the unemployment spell) and the adaptation process (\( \theta_4 \) and \( \theta_5 \), that correspond to 1 and 2 years after). Through these models, I observed resilience as the adjustment of life satisfaction after unemployment. Resilience defines the amount of loss in satisfaction with health and life satisfaction, and the speed of adjustment to its previous level.

The resilience measure has been standardized and divided in equal quartiles, \( Res_{q}, q = 1,\ldots,4 \). Therefore, I interact each quartile dummy with the set of four leads and lags of the unemployment spell. These interaction terms allow me to examine whether belonging to the different parts of the distribution of resilience translated into a
different anticipation and/or adaptation process. Having all the interaction terms in the same equations allows me to run tests on the equality of the coefficients.

The inclusion of individual fixed effects takes away all the constant-over-time individual characteristics, that might influence life satisfaction or health, including psychological traits and our resilience factors. In this way I control for the direct effect of these factors on unemployment. Of course, unemployment could still be endogenous in equation (1) as some unobserved time variant characteristics could be correlated with both unemployment and health or life satisfaction.

As a robustness check, I run the same model (1), by restricting the sample only to those individuals that lost their job due to plant closure. In the literature, plant closure is generally considered as an exogenous shock (see Schmitz, 2011). On the other side, this means to restrict the sample to a very small size (around 600 individuals per sex). Therefore, I analyzed both the results jointly.

All the estimations were carried out using a fixed-effects linear model with cluster-robust standard errors (clustered at the individual level) (Cameron & Miller, 2015).

5. Results

The following graphs shows how the resilience measure accounts for the variability in the loss of individual satisfaction with health (fig.2) and with life (fig.3) before and after experiencing unemployment. It compares people in the highest quartile of the resilience distribution with people in the lowest quartile. The graphs also show the difference of the effect of general unemployment in respect with plant closure only.

In general, it appears that personality resilience mediates the negative effect of unemployment on health and life satisfaction differently. First, the effect on health satisfaction is visible only for men, with no significant results for women. For men, the difference between the two quartiles of resilience is significant in t0 and t+2, but it remains significant only in t+2 after filtering for plant closure only. This suggests potential endogeneity issues in t0. This is also in line with the recent literature, that suggests that the effect of unemployment on health is delayed on time (see Stauder, 2017).

As per life satisfaction, the effect of resilience is mainly visible it t0. However, while it is significant for both sexes after general unemployment, it remains significant only for men.
Furthermore, men show an odd scissor process in t+1 and t+2, which might be due to the sample size or to other underlying process that would need to be explored more.

**Graph 3 and 4 – Main results**
Discussion

In general, it appears that a resilient personality positively moderates the effect of unemployment on well-being and health, despite this effect can probably be causally interpreted only for men.

There might be different explanations why the effect is immediate on life satisfaction and delayed on time on health satisfaction. It is likely that a sudden and unexpected change like involuntary unemployment (especially if we think of plant closure) immediately affects the general life satisfaction of the individuals. Even though people can easily find a new job, it might force them to rethink to their situation, aspirations, and it may affect their general job satisfaction. People with a resilient personality are capable of rethinking actively to their changing condition and proactively adapt to that. This capacity affects both their emotional life, by preventing to be overwhelmed and stressed, and their job life, by accelerating the process of finding a new one.

The channel through which resilience affects health satisfaction might mv quite similar. After loosing their job, people can be more prone to accept jobs that don’t satisfy their needs, both in term of job satisfaction and income. Less resilient individuals might settle for less to get out from a stressful condition as soon as possible. In the long run, this will affect their economic capacity of affording medical expenses. Another explanation would be that settling for less negatively affects individuals’ mental health. People who accept job that don’t satisfy their desires or their skills might suffer from mental health consequences over time.

Another puzzling result relies on the difference between men and women. If comparing the effect after plant closure only, no significant results on women are found. One possible explanation relies on the gender segregation of the labour market. If women are more likely to rely on their partner’s income, unemployment is not detrimental as is it is for men. If this is true, a resilient personality wouldn’t make a significant difference in terms of post-unemployment adaptation.

In general, the results demonstrate that a combination of personality traits can be used as resilience measures in the face of unemployment. In my theoretical conception, they do not work as a direct measure of practical skills to gain re-employment rapidly. Rather, personality is what makes the individuals able to react to adversity at an emotional level, and then to activate practical and emotional skills and resources.
6. Robustness checks

Personality traits’ stability

One assumption of this research is that the personality traits and social attitudes used to measure resilience are stable over time. Table 8 presents data on the average value of each personality trait and its standard deviation (column 2 and 3). The Big Five and the other personality traits are available for a total of approximately 16000-18000 observations for men and 17000-21000 for women (with less information for trustworthiness). Columns 4 and 5 of table 8 report information about mean-level changes. The change is calculated as the difference between the value in a certain measurement and the previous one. The results indicate that the changes in all the traits and social attitudes are normally distributed with mean zero and standard deviations between 0.5 and 1.

Table 8. Personality traits and mean level-change over time

<table>
<thead>
<tr>
<th>Personality trait</th>
<th>Males</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>St. dev.</td>
<td>Median</td>
<td>max</td>
<td>min</td>
<td>N</td>
<td>Wave</td>
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<tr>
<td>Emo. Stability</td>
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<td>1.126</td>
<td>4.417</td>
<td>7</td>
<td>1</td>
<td>17989</td>
<td>22, 26, 30, 34</td>
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<td></td>
<td></td>
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<tr>
<td>Extraversion</td>
<td>4.85</td>
<td>1.096</td>
<td>4.917</td>
<td>7</td>
<td>1</td>
<td>17989</td>
<td>22, 26, 30, 34</td>
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<td></td>
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<tr>
<td>Openness</td>
<td>4.792</td>
<td>1.082</td>
<td>4.75</td>
<td>7</td>
<td>1</td>
<td>17987</td>
<td>22, 26, 30, 34</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Locus of control</td>
<td>4.69</td>
<td>0.953</td>
<td>4.714</td>
<td>7</td>
<td>1</td>
<td>16406</td>
<td>22, 27, 32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>2.332</td>
<td>0.514</td>
<td>2.333</td>
<td>4</td>
<td>1</td>
<td>13017</td>
<td>20, 25, 30</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Life Goals - altruism</td>
<td>2.659</td>
<td>0.466</td>
<td>2.5</td>
<td>4</td>
<td>1</td>
<td>18390</td>
<td>21, 25, 29, 33</td>
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<table>
<thead>
<tr>
<th>Personality trait</th>
<th>Females</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>St. dev.</td>
<td>Median</td>
<td>max</td>
<td>min</td>
<td>N</td>
<td>Wave</td>
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<tr>
<td>Emo. Stability</td>
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<td>7</td>
<td>1</td>
<td>20065</td>
<td>22, 26, 30, 34</td>
<td></td>
<td></td>
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<tr>
<td>Extraversion</td>
<td>5.032</td>
<td>1.065</td>
<td>5</td>
<td>7</td>
<td>1</td>
<td>20063</td>
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<tr>
<td>Openness</td>
<td>4.872</td>
<td>1.072</td>
<td>4.944</td>
<td>7</td>
<td>1</td>
<td>20058</td>
<td>22, 26, 30, 34</td>
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<tr>
<td>Locus of control</td>
<td>4.631</td>
<td>0.939</td>
<td>4.714</td>
<td>7</td>
<td>1</td>
<td>17731</td>
<td>22, 27, 32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>2.341</td>
<td>0.499</td>
<td>2.333</td>
<td>4</td>
<td>1</td>
<td>15261</td>
<td>20, 25, 30</td>
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<tr>
<td>Life Goals - altruism</td>
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<td>0.449</td>
<td>2.667</td>
<td>4</td>
<td>1</td>
<td>21023</td>
<td>21, 25, 29, 33</td>
<td></td>
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</tbody>
</table>

The ideal data to examine the stability of personality traits would be a representative survey following individuals’ personality traits over the entire lifespan. Since such information is not available, I decided to adopt a more operational way, by observing how traits change within the range available. I also controlled for both cohorts’ effects. Some traits may score systematically differently in different cohorts: we may expect, let’s say, younger generations to be more open to experience. To control for wave effects, I centred
each measurement on the wave-mean level. Then, I divided our population in 6 cohorts of five years each, starting from 1960-65 to 1985-90, and I observed the fluctuations of the mean levels over the wave in which they are measured. Since measurement of personality traits started around 2000, I have a span of around 15 years in which we observe their stability. In year 2005, for example, cohort 1 is 45-50 old, and, in 2015, 55-60. Note that, since individuals start entering in the survey after 18, we have less information on the youngest cohorts.

I rely on confidence intervals (95%) to assess stability of personality traits over time. All the results are graphically presented in the Appendix 2. The graphs show that most of the personality traits remain stable along each cohort, independently by gender. Apart from few exceptions, there are no significant differences across the measurements.

**Personality traits intra-individual stability**

The second concern about personality traits is their intra-individual stability. As hypothesized by Cobb-Clark and Schurer (2013), the baseline level of a person’s trait may permanently vary after experiencing one or more adverse events. The SOEP contains information about familiar and health shocks. As per familiar events, I considered different types of bereavement (of partner, child, parents and family members). As per health-related events, I kept the outbreak of a new disability, stroke, diabetes, high blood pressure, cancer and other illnesses. For the last two, the SOEP detects the information every two years. The variable is computed as 1 the first time the subject is diagnosed with the illnesses, and 0 otherwise (which implies either no illnesses or a second positive diagnosis of the same illness). Both familiar and health-related events were grouped in three categories, with 0 if the subject didn’t suffer from any shock, 1 if he suffered from one event, and 2 if more than one event. Then, I computed an overall measure of events, summing the familiar to the health-related ones, and I divided it in three categories with the same logic. For each trait, I considered the intervals between each measurement separately. In table 9, the last 3 rows

---

4 Note this strategy cannot control for external events affecting personality traits permanently (for which I would need to us an IV).

5 The intervals considered are the following: wave 22-26, 26-30, 30-34 for the big five; 22-27, 27-32 for locus of control.
show the number of observations of each category of negative events. Note that the data refer to the last measurement of the Big Five, namely the events occurred between the wave 30 and 34.

<table>
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<th>Variable code</th>
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<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>Number of events</td>
<td>0</td>
<td>1</td>
<td>1+</td>
</tr>
<tr>
<td>N obs: familiar events</td>
<td>11,301</td>
<td>1,231</td>
<td>83</td>
</tr>
<tr>
<td>N obs health events</td>
<td>9,571</td>
<td>2,626</td>
<td>418</td>
</tr>
<tr>
<td>N obs: Overall</td>
<td>8,580</td>
<td>3,291</td>
<td>744</td>
</tr>
</tbody>
</table>

After creating the events-categories, I regressed the variation in personality traits with all of them. I considered the variation for each interval separately (for example, change in openness is first measured between wave 22-27, and then between 25-30\(^6\)). The results are shown in table 10 and 11. Here, I present results referring to the last measurement available (for example, the change of the Big Five between wave 30 and 34). In general, adverse events don’t significantly affect the variation of personality trait, and no trait is significantly affected by a single event of any type. Those results demonstrate that negative events don’t represent a determinant threat to stability of personality traits.

| Table 10. effect of life events on emotional stability, openness and locus of control |
|---------------------------------|----------------|----------------|----------------|
| Males                          | Females        | Males          | Females        |
| Emo. Stab                      | Openness       | Locus          |
| Fam. events: 0                 | 0.000          | 0.000          | 0.000          |
| (. )                           | (. )           | (. )           | (. )           |
| Fam. events: 1                 | 0.082          | -0.003         | -0.028         | 0.038          | -0.031          | -0.052          |
| (0.21)                         | (0.96)         | (0.60)         | (0.43)         | (0.57)         | (0.28)         |
| Fam. events: 2+                | 0.013          | 0.107          | 0.093          | 0.044          | -0.204          | 0.466**         |
| (0.96)                         | (0.57)         | (0.69)         | (0.77)         | (0.27)         | (0.01)         |

\(^6\) The reason behind is to keep the most observation as possible. The other choice is to observe the difference in personality traits between the first and the last measurement. However, this would led to a big problem of attrition.
Conclusions

In this research I examined whether personality traits can be used as predictors of resiliency to unemployment. I hypothesized that a combination of personality traits can be used as proxies for different resilience factors. In particular, emotional stability, openness, and locus of control were used as proxies for coping abilities, tolerance, acceptance of change, a meaningful life, competence, personal structure, and goal setting. This aggregated measures of resilience predicted a significantly better adaptation to unemployment, both for satisfaction with health and life satisfaction. These results demonstrate that some combinations of personality traits can be considered as a protective factor, and that they are effective against unemployment. Since stability of personality traits remains a concern for researchers, I assessed the stability of all the traits I used within the SOEP, both in respect to age and to adverse life events. Results show that none of the two issues represents a threat to the results.

This research opens the field to different developments. Resilience has usually been measured in respect of a single personality trait each time. My claim is that a combination of different traits and attitudes can predict resilience to different shocks. I expected different traits to protect people against other types of adverse life event (like familiar difficulties, health-related problems and others).

Also, other characteristics other than personality should be taken in account by economists. Recent resilience scales are starting to take in account characteristics such as cognitive skills and health (see, for example, Rossouw & Rossouw, 2016), which can be used a single resilience factor or as combinations of them.

As theorised by Heckman (2000), the importance of studying the functioning of soft skills, like personality and resilience, is that it could orient future policies aimed to build these skills, especially in the childhood and adolescence, when they are still malleable. In terms of labour market, these early investments can save future spending in health and unemployment subsidies and boost future population productivity.
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Appendix – change of personality traits over time

Fig A1 - Emotional stability

Change of Emotional stability

Males

Females

99% confidence intervals
Fig A2 - Openness to experience

Change of Openness

Males

Females

99% confidence intervals
Fig A3 - Locus of control

Change of Locus of control

Males

Females