PERSONALITY CHARACTERISTICS AND LIFE-ATTITUDES AS RESILIENCE FACTORS AGAINST UNEMPLOYMENT

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Abstract

In this paper we examined whether personality can predict adaptation to job loss. We hypothesized that combination of specific personality traits can be used as proxy of resilience. Rather than representing a resilience-skill or a practical resource per se, personality consists in the emotional and social ability of activating those skills and resources. We used emotional stability, openness and locus of control to build a measure of 'individual resilience', namely the ability of not being emotionally overwhelmed and being ready to react and to embrace change. Then, we used extraversion, altruism and trustworthiness to build a measure of 'social resilience', conceived as the ability of activating the social network for practical and emotional support.

We tested whether our resilience measures protect individuals against the loss in well-being due to unemployment. To account for both anticipation and adaptation effects, we observed the progression of well-being the year in which unemployment starts, four years before and four years after. Results show that both individual and social resilience predict a significant lower loss in well-being, with the exception of individual resilience for women. This demonstrate that personality can be used as a resilience factor against job loss.

Keywords: Resilience, unemployment, personality traits, panel data, SOEP

JEL classifications: J63, J64, J65

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Introduction

While there is a strong literature studying resilience in psychology, the research on individual resilience in economics is still scarce. Psychologists usually focus on small samples and specific populations, conceiving resilience as a context-specific characteristic (Windle, 2010). In this paper, we focus on resilience to unemployment, and, by taking advantage of the information contained in the German representative survey SOEP, we build two resilience measures generalizable to the entire population. Specifically, our attention verts on those psychological characteristics stable over time.

The SOEP is very rich 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. These personality characteristics comprehend behavioral attitudes such as locus of control and risk aversion, and attitudes towards other people and society, such as anomie and trustfulness and lifegoals.

The role of the big five and locus of control on labour market outcomes has already been documented, and the literature agrees on most of them. Generally, high scores in these traits are associated with better labour market outcomes (Heckman, 2011). On the other hand, the role of the other life attitudes remains largely unexplored. This paper takes in consideration both the big five and life attitudes to examine whether they predict resilience against job loss. It contributes both to the literature on resilience and to the literature on the effect of personality traits on labour market.

Our theoretical claim is that personality characteristics can be used as proxies of factors of resilience that are used in psychological resilience scales (see theoretical framework), like tolerance or acceptance of change. Also, we selected those resilience factors that we consider useful to contrast job loss. 'Individual resilience' summarizes all those characteristics that allows the individual not to be overwhelmed by the situation, to believe to be able to react to it, and not to be afraid of change. 'Social resilience', instead, describes the capacity of activating the social network both for emotional and practical support.

Like Powdtavee (2016), we tested our scales by examining how well they explain the variation in well-being due to job loss. We expect high scores to significantly predict a smaller loss and a faster recovery. We observed the entire adjustment process, taking in consideration both the anticipation process starting four years before the event, the year when the workers lose their job, and five years after. We assume that resilience influences well-being both directly (as a psychological ability to resist to stressful events) and indirectly (as the time necessary to find a new job).

The potential effect of individual resilience on unemployment is important for both psychologists and economists. Since it has already been demonstrated that involuntary unemployment affects well-being and health (Winkelmann & Winkelmann, 1995; Gebel and Voßemer, 2014), it is a matter of a society well-being to understand how people can cope with it. On the other side, it is important to understand which

characteristics make people stronger against economic adversities, especially if we think that some personality traits are still malleable in the early childhood (Borghans et al., 2008; Soto et al, 2008).

The paper is structured as follows: section one briefly presents the literature on resilience and personality traits as predictor of labour market outcomes. In section two we explain our theoretical framework and the rational used to construct our resilience scales. Section three briefly describes the SOEP survey, the dataset used for this research and the empirical strategy. Finally, section four and dive present the results and the robustness checks.

1. Literature Review

Resilience

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, 2009, par. 4)." This is the general framework of most the resilience studies in psychology (see, for example, Aburn, 2015).

The earlier researches 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. (2011) reported that most of the German adults were not strongly affected by the death of a close person. In economic literature, the general theory behind this is that every individual has a stable level of well-being, which can be perturbed by shocking events. After the event, the individual starts to adapt and, after certain time (usually four – five years), he 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, widowhood) on life satisfaction, and he appreciated a complete recovery after five years of most of them (apart from unemployment for males).

Instead of focusing on who is resilient and who is not, a second approach is to explore which characteristics make people resilient. This literature usually stresses the role of '*protective factors'*, or 'assets', namely characteristics that enables resistance to adversity and underlies 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 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 make people stronger 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 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 stronger against unemployment.

Resilience scales usually tend to generate their own protective factors and they cover different areas (Table 1, section 2). In a more operational way, protective factors can be grouped in 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, we will focus on the second group: psychological characteristics stable over time.

Personality traits and unemployment

The role of personality traits on labour market and employability, especially the big five and locus of control, has already been widely explored.

Locus of control describes the expected effect that an individual’s actions have on the world (Rotter, 1996). The attitude of people with external locus of control is to perceive that what happens to them doesn’t depend on their action, but on the fate, destiny, or anything external on which they have on control. On the other hand, people with internal locus believe that their action can actively influence their environment, therefore they tend to be more proactive (Weiner 1972). Conscientiousness is considered as a synonymous of diligent; in terms of labour market, it describes people who care of their career, who tend to be productive, goal directed and that tend to plan in advance. Also, they pay particular attention to social norms (Roberts et al, 2009). Emotional stability is the capacity of emotionally process emotions and feelings, both positive and negative, in a constructive way rather being overwhelmed by them, and is generally associated with being sensitive (Heckman et al, 2011). People with low levels of emotional stability (‘neurotic’) are anxious and can’t deal with stress. They tend to perceive the environment as threatening and are more likely to suffer from emotional pathological disorders (Barlow et al, 2014). Agreeableness and extraversion describe people’s way of relating with others. Extrovert people tend to be friendly and to feel comfortable in social situations, while agreeable ones are altruistic and empathic (Jensen-Campbell & Graziano, 2001; Corr &

Matthews, 2009). 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 employability, wags and type of job. Locus of control and conscientiousness, in particular, are considered the best predictors of all those outcomes (see, for example, Ham et all, 2009; Fletcher**,** 2013; Cobb-Clarck, 2015; Heineck and Anger, 2010), Similar results have been found for extroversion (George, Helson & John, 2011), emotional stability (Cubel, 2014; Nyhus & Pons, 2004) and openness (Muller and Plug, 2006), while agreeableness seems to be a negative predictor of wages (Muller and Plug, 2006) especially for women (Cobb-Clark & Tan, 2009).

Most of these personality traits are also associated with positive outcomes in unemployment. People with internal locus of control which lose their job commit more to find a new one (because they believe their efforts will be rewarded) and this proactivity translates in higher chances of re-employ (McGee & McGee, 2016). Unemployment spells seem to be shortened also by conscientiousness and emotional stability (Uysal & Pohlmeier, 2011; Viinikainen & Kokko, 2012) and lengthened by agreeableness (Engelhardt, 2017). However, there is not much research on how personality traits reduce or (increase) the negative effect of unemployment on life satisfaction. Few exceptions come from Boyce et al (2010), which found out that conscientious people, who generally care more of career and job realization, suffer more from unemployment, and Hahn et al (2015), who confirmed the negative effect of conscientiousness after unemployment, and the positive effect of extroversion. Extrovert people are supposed both to be able to rely on emotional supports in order to cope with uncomfortable situations and to a strong social network that ease the search of a new job.

The other life attitudes token in consideration are not widely explored in the literature and will be discussed in the next chapter.

2. Theoretical framework

Our main assumption is that personality traits can be used as proxies of resilience's factors. The most used scales in psychology generally assess resilience through underlying factors, as showed 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 (conscientiousness, extraversion, agreeableness and openness). 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. We follow this new stream of findings and use personality traits to build a measure of resilience.

Our first step was to analyse six among the most used resilience scales, focusing on their theoretical frameworks and the factors created to measure resilience[2]. The first 7 columns of table 1 show the factors used in the six scales to measure individual resilience. Our aim was to use individual personality characteristics as proxies of these underlying factors. Therefore, our second step was to analyse all the personality traits and social attitudes contained in the SOEP. The SOEP contains several information on individual personality characteristics (for a summary of all the scales present in the SOEP, refer to the most recent *SOEP Scales Manual*, 2017). First, we have data on the so-called big five, psychological traits that describe individuals' personality (those are: emotional stability, conscientiousness, extroversion, agreeableness and openness to experience). Secondly, we have information on what we can group as life or social attitudes, which describe individuals' patterns of behavior towards society and other people. The SOEP contains data on trustfulness, reciprocity, forgiveness, anomie, career-orientation, family-orientation, altruism and locus of control[3].

Table 1. RESILIENCE SCALES AND THEIR FACTORS. In parenthesis we put those factors that, even with different names, measure a very similar construct.

	CD-RISC	RSA	WAGNILD	SPF	BRS	EGO-RES	INDIV. RES.	SOCIAL RES.
Tenacity and personal competence	X	X					X	
Social competence (emo. regulation)		X		X				X
Self-confidence and tolerance	X		X				X	
Acceptance of change	X						X	
Control/personal structure	X						X	
Spirituality	X							
Social support		X		X				X
Family coherence		X						X
Goal-setting efficacy				X				
Meaningful life			X				X	
Perseverance			X					
Equanimity			X					
Existential aloneness			X					
Planning behaviour				X				
Coping abilities	X				X	X	X	

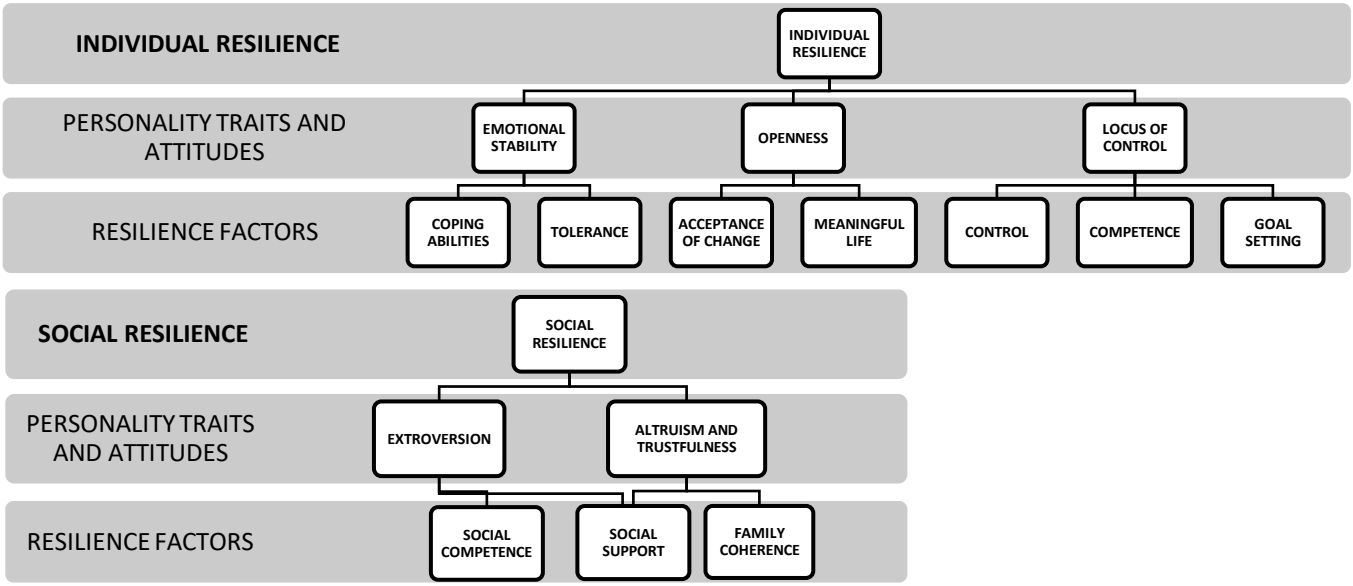
Third, we chose which of those traits and attitudes could be used as proxies of resilience. Following a commonly accepted classification (Windle, 2011), we sub grouped resilience in two components: individual

[2] The scales we 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).

[3] For simplicity, from now we will refer to them simply as social attitudes.

and social[4]. The last two columns of table 1 shows the correspondent resilience components for each factor. Finally, table 2 shows which personality traits and attitudes were used as proxies of the two resilience components.

Table 2. In the rows "Factors in our scales" we listed the factors we build in the SOEP, while in the following column we listed the correspondent factors in the resilience scales.



As shown in the table, we used emotional stability, openness and locus of control as proxies of the individual component of resilience, and extroversion, altruism and trustfulness for the social one.

In this conceptualization, individual resilience summarises all the personality characteristics necessary to activate practical resources and face unemployment. Whenever an individual faces job loss, he or she necessarily gets out from the previous routine and needs to activate different resources to find a new equilibrium. As per many other adverse events, job loss can be overwhelming, and triggering a feeling of panic.

The capacity of facing adversities is the core definition of resilience itself: it is what makes people strong enough to resist to negative events. When resilience scales measure this characteristic, they generally refer to it as simply 'resilience', rather than to an underlying factor[5]. The Brief Resilience scale, for example, claims to directly measure the resilience construct (Smith at al, 2008). In table 2, we refer to this factor as

[4] According to Windle (1985), a third component is 'family cohesion'. However, since we decided to focus our analysis on personality trait, we didn't take it in consideration. For a research considering childhood family characteristics as resilience predictors, see Powdthavee (2014).

[5] According to Oshio et al (2018) resilience scales follow two main approaches. The 'ego-resilience' scales focus on determining individuals' coping abilities. In this sense, 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 focuses on those characteristics that make people more or less resilient (namely the 'protective factors'). In this view, it assesses resilience indirectly. In table 3, the factor 'resilience' refers to the first way of measuring resilience, namely the direct one. Generally, items of this type ask direct questions on the ability of the individual of coping with negative events (like how difficult it is to face it, how long it takes to recover, etc…).

'coping strategies. Other scales measuring coping scales 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). We proxied these factors through emotional stability, which is supposed to measure the capacity of facing events and stressors without rapid change of mood or being overwhelmed. Especially, one dimension 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 job loss in a temporal scale, emotional stability represents the first necessary trait: it prevents people to 'freeze' and panic and, then, 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, he may give up in looking for a job). We expect emotionally stable individuals to be more likely to respond to stress in a 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 from 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 treat, but as an opportunity to grow. For example, it has been demonstrated the open-mind people tend to have higher levels of job mobility (Van Vianen et al, 2003), as a constant need of new experiences. We also related openness to 'meaningful life' (Wagnild, & Young, 1993). This resilience factor describes the feeling of having a purpose and being active and interested on 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). We expect open people to be active in different activities, and not only their job, which protects them in case of job loss.

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 we 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 and the desire of being in control of things. We linked these two factors to locus of control. People with 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[6]. As demonstrated by Cobb-Clark & Tan (2009), for example, people with internal locus of control commit more in looking for a job when unemployed, which translated in higher rates of re-employability.

To summarize, our measure of individual resilience comprehends all those personality characteristics that allows people to activate what they need to face job loss. It doesn't consist of *practical* resources themselves, but what it takes to activate those resources. It groups the personality and attitudinal characteristics that make it possible. As theorized by more recent resilience researchers (see, for example, Rossouw & Rossouw, 2016), these resources should also be considered. For example, they underline the importance of resilience factors like intelligence and health.

A last note on individual resilience concerns the reason why we kept conscientiousness out. Conscientiousness can be conceived as a good proxy of resilience factors such as goal-setting efficacy, perseverance and planning behaviour. However, it has also been demonstrated that highly conscientious workers suffer from a bigger loss in life satisfaction after unemployment (Boyce, 2010; Hahn, 2015). The reasons are that these individuals tend to invest more on their career, and, therefore, they suffer more when they lose their job. In terms of resilience, it may be the case that caring too much of social norms can be detrimental in some situations.

Social resilience summarizes the capacity of activating the social network to receive both emotional and practical support. Like individual resilience, it doesn't define those resources themselves, but the personality and attitudinal characteristics that predict them. We took in consideration two main resilience factors: social competence and social support. Social support measures the "support accessible to an individual through social ties to other individuals, groups, and the larger community" (Lin, 1979, p.109): it both measures the quality of social relations, considering family members and friends, and the dimension of the social network of the individual. Items that measure this factor generally focus on the number of important relationships, the quality of familiar bonds and friends.

Social competence measures the social skills of the individual. In the resilience scales, social competence is usually measured as emotional or social regulation (for example, Ponce-Garcia et al, 2015). The term emotional regulation refers to the psychological mechanism by which we regulate the expression and strength of our emotions, and social regulation refers to the regulation of emotions in social contexts, considering both how we regulate ourselves and how we help others to regulate themselves (Grecucci et al, 2015). Being able to self-regulate in a social context entails the capacity of emotionally and cognitively

[6] 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, we expect this to happen rarely, and the two constructs to be highly correlated.

understand others and is correlated with positive health and psychological outcomes (Ewart et al, 2002). We expect social regulation to assist individuals to build useful social relations over time – which can turn useful when looking for a job – and in case of job interviews.

We used extroversion, trustworthiness and altruism as proxies of these factors. First, extroversion is naturally linked with social support. Extrovert people tend to have more friends, stronger social networks and better peer relations (Jensen-Campbell et al, 2002), and they are more likely to search for social support as a coping strategy (Amlrkhan et al, 1995). According to Hahn et al (2015), extrovert people can rely on friends and relatives to cope with unemployment, and they can use their social network to find job interviews faster. However, extroversion doesn't simply describe a preference for socially dense situations, but also the ability of adapting the emotional reactions to what is expected and advantageous in social situation to regulate emotional reactions with other people (Ciarrochi et al, 1999), and it is correlated with understanding emotions and with the use of social support to regulate emotions (Kokkonen & Pulkkinnen**,** 2001). Also, Gurtman (1999) considers extraversion as a predictor of social competence, defined as manifest aspect of social interaction (like speech style, non-verbal communication, and so on).

The role of the other two social attitudes, trustworthiness and altruism, remains quite unexplored. Trustworthiness is defined as the individuals' readiness to trust other individuals unknown to them (Stolle, 2002). When a society is highly trustworthy, people are more likely to engage each other. Correlations between trustworthiness and social support have been demonstrated: childhood trustworthiness predict number of close friends in adolescence (Rotenberg et al, 2004), while managerial trustworthiness is positively related to job performance and organizational commitment (Byrne, 2011).

Altruism is one of the three factors measuring life goals, and it measures the perceived importance of helping other people and being involved in social activities (Headey, 2007) (the other two measures the importance of career and family goals). There are no research assessing the relation between altruism and social competence or social resources. Our hypothesis is that the combination of trustworthiness and altruism would lead people to build wider social networks and to develop more emotional and practical relations with other people. In general, our expectation is that the combination of high levels of extraversion, trustworthiness and altruism generates both weak and strong social ties: close friends to rely on for emotional support and a social network for more practical support.

In general, we expect social resilience to prevent drop in wellbeing due to job loss in two ways. First, people with strong social support can rely on family and friends to get emotional support and recover fast from an inconvenient situation. Remaining emotionally stable doesn't only depend on internal resources, but also on other people support. Also, a wide social network works as a practical resource and a tool to find a new job. Note that, as per individual resilience, the social one doesn't directly describe the practical resources themselves, but the personality characteristics and attitudes associated with them.

Finally, we excluded those traits that are expected to have negative correlation with labour market outcomes, such as agreeableness and forgiveness. Those traits may influence the ability of social regulation but are likely to obstacle the search for a new job (Muller and Plug, 2006; Cobb-Clark & Tan, 2009).

3. Data and methods

The dataset used in this study is the German Socio-economic panel (SOEP), a longitudinal national-representative survey started in 1984. The SOEP survey is one of the few longitudinal datasets which collect information on psychological, social and economic characteristics of households and individual that is representative of the entire population. We restricted our analysis to those individuals of which we have fully information on personality traits and life attitudes and to the people active in the labour market within the age of 20 and 60. The main reason for this is that, as demonstrate by Cobb-Clark (2012, 2013), the big five and locus of control are stable within this age-rage. Apparently, they are still fluid in the adolescence, and they tend to drop after 65. Similarly, life goals are defined as "relatively long-term, value-laden life objectives" (Meier, 1959), while stability of trustworthiness was assessed by Naef & Schupp (2009)[7].

Personality traits

The SOEP contains several information on personality traits and social attitudes. The big five and the locus of control were introduced in 2005, trustworthiness in 2003 and altruism in 1990. All of them are then measured in regular interval of 4-5 years. To compute the values of personality traits, we calculated the average considering all the values available per each individual in all waves, and finally we matched the result with all the waves with no information. In the literature, a common way to proceed is to take the value from one single wave (assuming the trait as stable, generally the first one available) and match it with all the other waves (see, for example, Cobb-Clark, 2009). By using the values from all the waves, we aim to reduce the measurement error. A person may pick a different number from the 'real value' due to situational and contingent reasons; this divergence should decrease the more measurement we take in account. Descriptive statistics of the six traits considered are shown in table 3.

[7] See robustness checks for an assessment of traits and attitudes' stability.

Table 3. Descriptive statistics of personality traits and social attitudes

Trait	Means	Std	Median	Max	Min	I.Q. 25% -75%	Observations
				Males			
Emotional stability	4.42	1.12	4.41	7	1	1.55	17989
Openness	4.79	1.08	4.75	7	1	1.5	17987
Locus of control	4.69	0.95	4.71	7	1	1.35	16406
Extraversion	4.85	1.0	4.91	7	1	1.58	17989
Trustworthiness	2.3	0.51	2.33	4	1	0.66	13017
Altruism	2.6	0.46	2.5	4	1	0.57	18390
				Females			
Emotional stability	3.9	1.15	4	7	1	1.5	22908
Openness	4.88	1.06	5	7	1	1.41	22905
Locus of control	4.65	0.93	4.7	7	1	1.28	19856
Extraversion	5.05	1.07	5	7	1	1.5	22908
Trustworthiness	2.34	0.50	2.33	4	1	0.67	17580
Altruism	2.72	0.45	2.36	4	1	0.5	24809

Data taken from SOEP. The entire wave range goes from wave 20 to 34. Even though altruism was measured from wave 7 (year), there is a long jump from wave 12 to 22. Therefore, we used values starting from wave 22.
Std = standard deviation. I.Q. shows interquartile ranges from 25 to 75%.

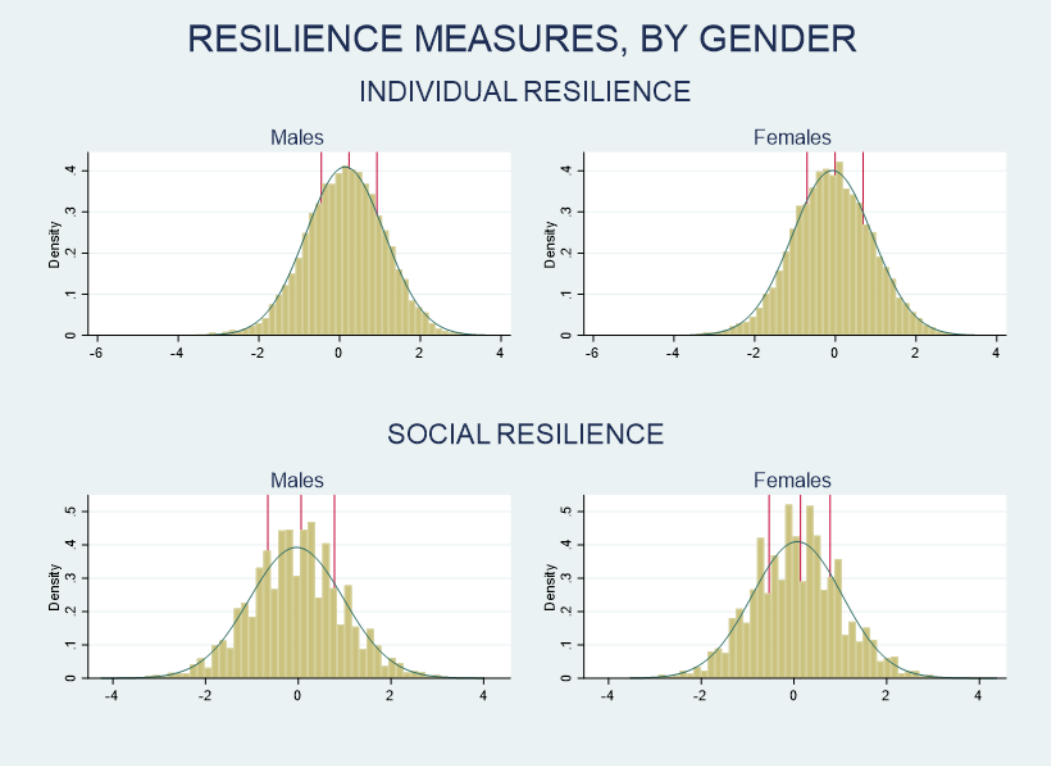
Personality traits and locus of control show similar patterns, with means around 4.5 and 5 and standard deviation from 0.5 to 1. There are not strong differences between genders, except for emotional stability, which presents lower values for females. Emotional stability is also the trait with the highest variability, for both sexes. Trustworthiness and altruism also present normal distributions and similar variances between sexes. For our analysis, we divided all the traits in four quartiles around the median (see, for example, (Powdatwee, 2016). Our aim is to see whether there is a significant difference in being part of the highest quartile in respect to the lowest quartile.

Table 4 and fig 1 presents descriptive data on the two standardized measures of individual and social resilience. Both the measures are normally distributed with mean close to 0. The red lines separate the distribution in quartiles around the median. Our analysis, therefore, will focus on the right and left side of those distributions.

Table 4. Descriptive statistics of individual and social resilience

	Sex	mean	std	min	max	I.Q. 25%	I.Q. 50%	I.Q. 75%	N
Individual resilience	Males	0.227	1.030	-4.885	3.690	-0.454	0.233	0.924	14465
	Females	-0.011	1.034	-5.094	3.480	-0.702	-0.007	0.688	16072
Social Resilience	Males	0.035	1.079	-4.251	4.015	-0.657	0.062	0.781	12542
	Females	0.146	1.029	-3.532	4.375	-0.537	0.142	0.781	14875

Figure 1. Distribution and quartiles of individual and social resilience.



Explanatory and dependent variables

To observe adaptation to job loss, we observed the variation in life-satisfaction. The question, present in all the waves, asks the respondents; 'How satisfied are you with your life, all things considered?' and it is formed by a scale from 0 to 10. We then tested how well our resilience scales work against unemployment. We build the variable by computing as 0 employed workers and 1 people who stop working in the following wave. Considering only individuals with full information on personality traits, our final sample consists of 11,028 men and 10,022 women. Of them, 3827 men and 4702 women experience at least one unemployment spell.

Method

Following the Clark's paper (2004), we first observe the effect of unemployment on life satisfaction by considering both the anticipation and the lag effect. To examine the consequences of job loss on life satisfaction, we use an individual fixed-effect regression approach, which shows the life satisfaction of the worker *i* at time t:

$$Y_{it} = \alpha_i + \beta X_{it} + \theta_1 S_{1,i(t-4)} + \theta_2 S_{2,i(t-3)} + \theta_3 S_{3,i(t-2)} + \theta_4 S_{4,i(t-2)} + \theta_5 S_{5,i(t0)} + \varepsilon_{it} + \mu_i \quad (1)$$

$$Y_{it} = \alpha_i + \beta X_{it} + \theta_1 S_{1,i(t+1)} + \theta_2 S_{2,i(t+2)} + \theta_3 S_{3,i(t+3)} + \theta_4 S_{4,i(t+4)} + \varepsilon_{it} + \mu_i \quad (2)$$

Where Y_{it} represents the level of life satisfaction of individual *i* at time t, ε_{it} is the time-variant error term and μ_i the time-constant one. Note than, by estimating in fixed effect, the μ_i disappears; therefore, it is important to control for all the possible time-variant confounders (Lu and White, 2014). Ferrer-i-Carbonell (2004) listed a group of fundamental covariates to keep in consideration when estimating the change of life satisfaction in fixed effect: age, income, being in a relationship, the birth of a baby and change in health. Finally, time dummies should be considered to avoid trend-effects. In our specification X_{it} contains all these variables. The first model (1) observe the anticipation effect, namely whether there is a change in life satisfaction, starting four years before the event. The second one (2) focuses on the effect of the event in the same year it happens (t_0) and four years later (adaptation effect).

In order to extrapolate the effect of resilience, we interact it with the unemployment-event:

$$Y_{it} = \alpha_i + \beta X_{it} + \theta_1 (S * Z)_{1,i(t-4)} + \theta_2 (S * Z)_{2,i(t-3)} + \theta_3 (S * Z)_{3,i(t-2)} + \theta_4 (S * Z)_{4,i(t-2)} + \\ + \theta_5 S(S * Z)_{5,i(t0)} + \varepsilon_{it} + \mu_i \quad (3)$$

$$Y_{it} = \alpha_i + \beta X_{it} + \theta_1 (S * Z)_{1,i(t+1)} + \theta_2 (S * Z)_{2,i(t+2)} + \theta_3 (S * Z)_{3,i(t+3)} + \\ + \theta_4 (S * Z)_{4,i(t+4)} + \varepsilon_{it} + \mu_i \quad (4)$$

Here, *Z* represents both our resilience measures (individual and social), separately. To observe its effect, we standardize it and divide it in quartiles across the median. Then, we compared the highest and the lowest group and we observe how they shape the anticipation and the adjustment of life satisfaction over the waves. In this way, we can examine whether belonging to the highest part of the distribution of resilience translate in a significant difference in the anticipation and adaptation process. All of our estimations are carried out using a fixed-effects linear model with cluster-robust standard errors (clustered at the individual level) (Cameron and Miller, 2013).

4. Results

Table N presents descriptive statistics on the effect of unemployment and the mediating role of resilience. Columns 2 and 3 show that unemployed people's life satisfaction is significantly lower than

employed ones, with a more pronounced effect on males. Columns 6 to 9 compare life satisfaction means of unemployed people if they belong to the highest quartile of resilience vs the lowest quartile. The table shows that both the measures of resilience significantly predict a higher life satisfaction if people have high resilience values.

	Table 5. Effect of unemployment on life satisfaction.							
	Employed vs unemployed			Unemployed only				
		Males	**Females**		**Males**		**Females**	
					Individual resilience	Social resilience	Individual resilience	Social resilience
LIFA SAT.	Empl.	0.078	0.057	I.Q. 0-25%	-1.072	-0.932	-0.623	-0.618
	Unempl	-0.614	-0.239	I.Q. 75%+	-0.027	-0.077	0.287	0.184
T STAT		98.917	51.507		-38.785	-30.308	-46.939	-42.222
P VALUE		0.000	0.000		0.000	0.000	0.000	0.000
N		190297	188445		7704	7985	14373	13297

To determine the causal effect of resilience, we run fixed-effect regression. The aim of the study is to understand to what extent our resilience measures could account for the variability in the loss of life satisfaction before and after experiencing job loss.

Figure 2. Effect of unemployment on life satisfaction

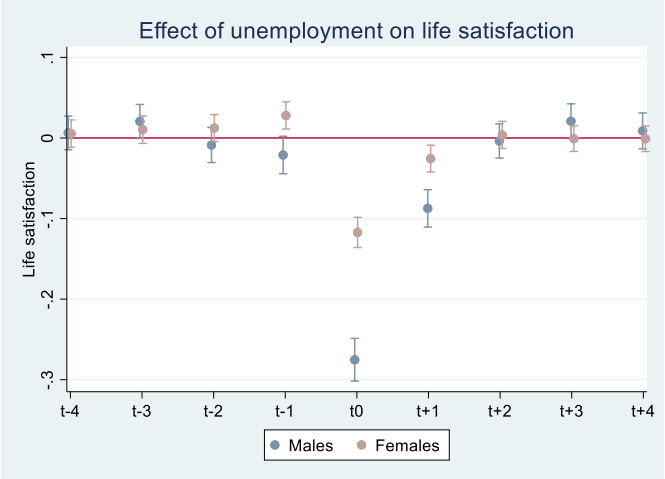


Figure 2 shows the effect of unemployment on life satisfaction. Results confirm what is widely agreed on literature (Dooley, 1994), namely that unemployment has a strong negative effect on well-being. Also, men seem to suffer from a significantly higher loss in well-being, which is still present one year later.

Table 6 presents the results of the covariates on life satisfaction after job loss, while figure 3 graphically shows the effect of resilience, by comparing people in the highest quartile of the resilience distribution with people in the lowest quartile. Results confirm literatures' findings on the importance of covariates when analyzing the change in life satisfaction in fixed effects. Health and familiar income have the strongest positive effect, followed by entering in a relationship and having a child. The only negative predictor is age, but the effect seems negligible.

Results on resilience fall around t_0 (when the worker enters in unemployment) and the years before and after. In general, people in the highest quartiles of resilience have a much smaller drop in t_0 and, in some cases, in t+1 or t-1. Fig X also shows when the difference is statistically significant.

TABLE 6. Effect of resilience in the adaptation to unemployment

	INDIVIDUAL RESILIENCE				**SOCIAL RESILIENCE**			
	Males		Females		Males		Females	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	Life satisfaction				Life satisfaction			
	High quart.	Low quart.	High quart.	Low quart.	High quart.	Low quart.	High quart.	Low quart.
t-4	0.015	-0.008	**0.034***	-0.007	-0.007	0.025	0.019	-0.005
	(0.52)	(0.72)	**(0.09)**	(0.68)	(0.78)	(0.24)	(0.30)	(0.82)
t-3	**0.041***	0.014	0.011	0.018	0.002	0.021	0.028	-0.010
	(0.07)	(0.53)	(0.56)	(0.32)	(0.93)	(0.35)	(0.11)	(0.64)
t-2	0.038	-0.012	0.018	0.019	0.003	-0.029	-0.005	0.029
	(0.11)	(0.59)	(0.36)	(0.27)	(0.92)	(0.17)	(0.76)	(0.17)
t-1	0.009	**-0.089*** **	**0.053*** **	**0.036** **	-0.020	**-0.058** **	**0.042** **	0.004
	(0.72)	**(0.00)**	**(0.01)**	**(0.04)**	(0.44)	**(0.01)**	**(0.01)**	(0.85)
t0	**-0.165*** **	**-0.347*** **	**-0.071*** **	**-0.133*** **	**-0.154*** **	**-0.312*** **	**-0.054*** **	**-0.159*** **
	(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
t+1	-0.009	**-0.128*** **	-0.007	**-0.031***	**-0.084*** **	**-0.098*** **	0.012	**-0.043** **
	(0.76)	**(0.00)**	(0.68)	**(0.10)**	**(0.00)**	**(0.00)**	(0.48)	**(0.03)**
t+2	0.024	-0.008	0.026	0.009	0.026	-0.018	-0.018	0.023
	(0.28)	(0.72)	(0.17)	(0.66)	(0.33)	(0.39)	(0.27)	(0.29)
t+3	**0.043***	0.011	0.023	-0.000	0.032	-0.014	-0.009	0.014
	(0.06)	(0.66)	(0.22)	(1.00)	(0.24)	(0.51)	(0.58)	(0.47)
t+4	**0.040***	0.010	0.010	0.015	0.010	-0.010	-0.007	-0.004
	(0.08)	(0.69)	(0.58)	(0.36)	(0.69)	(0.66)	(0.65)	(0.86)

	COVARIATES							
	Males		Females		Males		Females	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	Life satisfaction				Life satisfaction			
	High quart.	Low quart.	High quart.	Low quart.	High quart.	Low quart.	High quart.	Low quart.
Age	-0.009***	-0.004***	-0.011***	-0.003**	-0.009***	-0.004***	-0.010***	-0.003**
	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.02)
New child	0.055***	0.071***	0.161***	0.132***	0.055***	0.072***	0.158***	0.132***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Fam. income	0.170***	0.207***	0.180***	0.171***	0.171***	0.207***	0.179***	0.171***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Relationship	0.065***	0.076***	0.042***	0.018	0.065***	0.075***	0.041***	0.019
	(0.00)	(0.00)	(0.00)	(0.26)	(0.00)	(0.00)	(0.01)	(0.26)
Health sat.	0.140***	0.145***	0.126***	0.133***	0.141***	0.145***	0.126***	0.133***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Observations	85555	81299	88582	84355	85555	81299	88582	84355

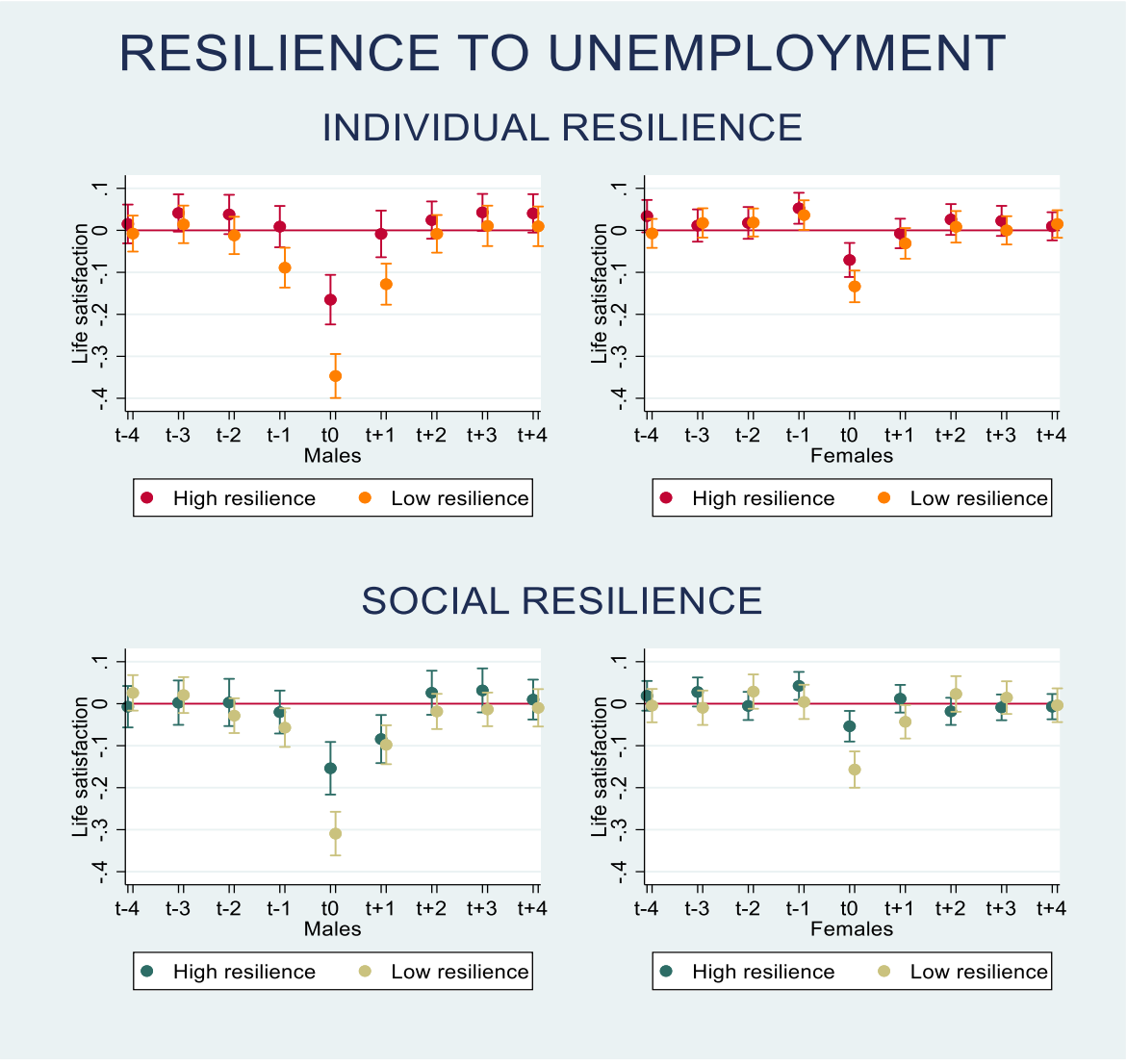
p-values in parentheses

* p<.10 ** p<.05 *** p<.01

Except for women's individual resilience, our measures always predict a significantly better adaptation to unemployment in t_0. Individual resilience seems particularly good for men, for which it predicts a significantly better anticipation and adaptation. Social resilience has a similar impact on men and women, predicting a good adaptation in t_0 only.

In general, results demonstrate that combination of personality traits can be used as resilience measures against unemployment. In our theoretical conception, they don't work as a direct measure of practical skills to re-employ rapidly. Rather, personality is what make the individual able to react to an adversity at an emotional level and, then, to activate practical skills and resources.

Figure 3. Effect of unemployment on life satisfaction: the role of individual and social resilience.



It remains to explain why individual resilience doesn't work for women. A possible explanation is that personality is less (or differently) relevant for women. This would reflect a hidden gender segregation based on personality, a hypothesis that has already been explored by, for example, Semynka (2010). A different explanation relies on the different levels of resilience between gender. As shown in the descriptive statistics, females in Germany seem to score significantly lower in emotional stability than men; therefore, it may be the case that women simply score lower in our individual resilience measure. To test this hypothesis, we ran our models (3) and (4) for females computing individual resilience as the average of locus of control and openness only. The results are shown in fig. 4. By excluding emotional stability, the problem is only partially solved: women seem to react better to unemployment, but the difference in t_0 is still slightly non-significant. Therefore, it is possible that both our hypothesis on the different effect on women (a gender segregation effect and the absolute level of resilience) are true. We remand this issue to further research.

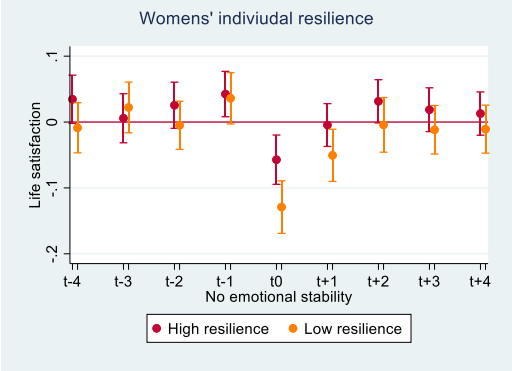


Figure 4. Women's' individual resilience with no emotional stability

Robustness checks

One of the most important assumptions in this research is that the personality traits and social attitudes used to measure resilience are stable over time. Columns 2 and 3 of table 7 present the average value of each personality trait, while columns 4 and 5 of table 7 report information about mean-level change. 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.

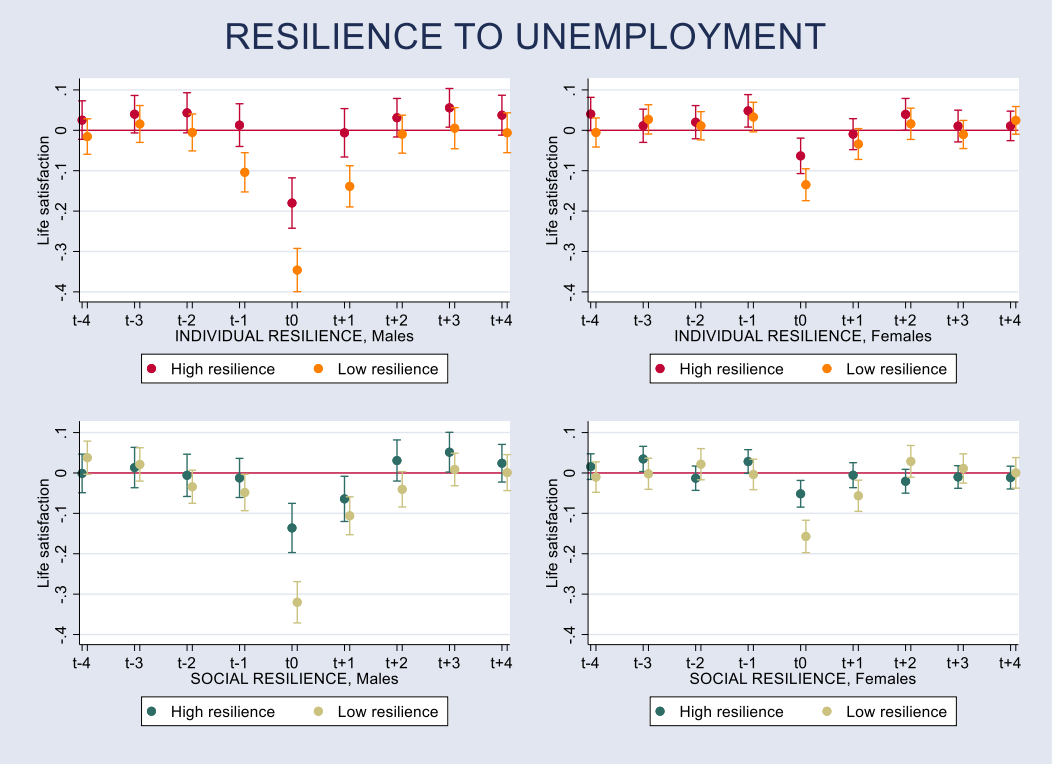
Table 7 Personality traits and mean level-change over time

	Level		Changes		
	Mean	Std	Mean	Std	Waves
Altruism	2.712245	0.5101252	-0.0129881	0.5145194	21, 25, 27, 29, 33
Trustfulness	2.340874	0.5428808	0.0153208	0.5478078	20, 25, 30
Extroversion	4.922017	1.144095	-0.0290868	0.94454	22, 26, 30, 34
Emotional stability	4.170739	1.233107	0.0542618	1.090743	22, 26, 30, 34
Openness	4.793953	1.10741	0.0718748	0.9421992	22, 26, 30, 34
Locus of control	4.702214	0.9679956	0.007708	0.9115363	22, 27, 32

The last column of the table shows the wave intervals used to measure the change. We avoided to use close intervals (e.g. < 2 years) and we focused on the time-constant intervals. Std = standard deviation.

Researches conducted on the Australian dataset (HILDA) (Cobb-Clarck & Schurer, 2012; 2013) and on the German one (SOEP) (Schäfer, 2017) have already assessed the stability of the big five and locus of control. While the Australian population is characterized by a higher stability of personality traits over age (the fall tend to start after 65) (Cobb-Clarck & Schurer, 2012; 2013), the German population presents more instability. However, a deeper look reveals that differences in age groups are mainly due to cohort effects. In particular, younger generation tend generally to score higher in certain traits like extroversion and openness (Schäfer, 2017). To test this hypothesis, we divided the entire sample in six cohort-groups (starting with people born in 1960 until 1990, with groups of 5 years each) and we observed the average value of each trait at each wave-measurement. Also, in order to avoid wave-effects, we centered the scores on each year it is measured[8]. The results are shown in fig 8 to 13 (see Appendix). The graphs show that most of the personality trait remain stable along each cohort. The few cases of significantly different distribution of personality traits over time appear in openness and altruism. The 1980-85 cohort of men and the 1975-80 cohort of women present both one measurement which falls outside of the distribution of the other measurements. Similarly, the 1970-75 cohort of men looks instable, while female scores on average significantly more in year 2016. To account for these differences, we run our main estimation again by dropping the cohorts mentioned above, and by imputing females' altruism without considering the measurement in wave 2016. Figure 7 presents the results after cleaning the sample.

Figure 5. Effect of resilience, accounting for personality traits variation.



[8] Note that, by centering each value on the year-average, we can control for measurement biases. However, we cannot exclude the effect of collective events that may permanently affect personality traits.

No significative differences emerge, confirming that the few cases of instability are not determinant to our results.

The second concern about personality traits is their intra-individual stability. As hypothesized by Cobb-Clark, the baseline level of a person's trait may permanently vary after experiencing one or more adverse events. Like HILDA, the SOEP contains information about familiar and health shocks. As per familiar events, we considered different types of bereavement (of partner, child, parents and family members), while for health-related events we 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. We computed as one the first time the subject is diagnosed with the illnesses, and 0 otherwise (which implies both 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, we computed an overall measure of events, summing the familiar to the health-related ones, and we divided it in three categories with the same logic. For each trait, we considered the intervals between each measurement separately[9]. Finally, we also considered unemployment itself as a possible treat to the stability of personality. We simply computed as one if the subject experienced at least one unemployment spell within the two measurement of personality.

After creating our independent variables, we regressed the variation in personality traits with all of them. We considered the variation for each interval separately (for example, change in trustworthiness is first measured between eave 20-25, and the between 25-30, rather skipping directly from 20 to 30)[10]. The results are shown in table 8 and 9. Here, we present results referring to the last measurement available (for example, the change of locus of control between wave 27 and 32). 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 treat to stability of personality traits.

[9] The intervals considered are the following: wave 22-26-30-34 for the big five, 22-25-29-33 for altruism, 20-25-30 for trustfulness, 22-27-32 for locus of control.

[10] 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.

Table 8. effect of life events on emotional stability, openness and locus of control

	INDIVIDUAL RESILIENCE					
	Males	Females	Males	Females	Males	Females
	Emo. Stab		Openness		Locus	
Fam. events: 0	**0.000**	**0.000**	**0.000**	**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)
Health events: 0	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
	(.)	**(.)**	**(.)**	**(.)**	**(.)**	**(.)**
Health events: 1	**0.027**	**-0.011**	**0.070**	**0.026**	**-0.010**	**-0.033**
	(0.60)	**(0.81)**	**(0.10)**	**(0.48)**	**(0.82)**	**(0.36)**
Health events: 2+	**0.112**	**-0.171**	**-0.019**	**-0.102**	**0.007**	**0.095**
	(0.48)	**(0.12)**	**(0.89)**	**(0.25)**	**(0.95)**	**(0.27)**
All events: 0	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
	(.)	**(.)**	**(.)**	**(.)**	**(.)**	**(.)**
All events: 1	**0.014**	**-0.020**	**0.029**	**0.015**	**-0.010**	**-0.033**
	(0.76)	**(0.62)**	**(0.44)**	**(0.66)**	**(0.80)**	**(0.35)**
All events: 2+	0.177*	**-0.068**	**0.063**	**-0.000**	**-0.061**	**0.031**
	(0.09)	**(0.40)**	**(0.47)**	**(1.00)**	**(0.40)**	**(0.60)**
Unemployment	**-0.065**	**-0.029**	**0.063**	**-0.043**	**-0.020**	**0.033**
	(0.27)	**(0.54)**	**(0.20)**	**(0.25)**	**(0.70)**	**(0.40)**
N	**3159**	**3786**	**3159**	**3788**	**2740**	**3057**

N refers to the number of observations for the event with more occurrences (familiar events). Note that, according to the event considered, N can vary slightly.

Table 9. effect of life events on altruism, trustworthiness and extraversion

	SOCIAL RESILIENCE					
	Males	Females	Males	Females	Males	Females
	Altruism		Trust		Extrav.	
Fam. events: 0	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
	(.)	**(.)**	**(.)**	**(.)**	**(.)**	**(.)**
Fam. events: 1	**-0.003**	**0.030**	**-0.055**	**0.025**	**-0.006**	**-0.051**
	(0.90)	**(0.17)**	**(0.08)**	**(0.34)**	**(0.91)**	**(0.30)**
Fam. events: 2+	**-0.057**	**0.009**	**0.156**	**0.054**	**-0.214**	**0.107**
	(0.62)	**(0.91)**	**(0.18)**	**(0.63)**	**(0.38)**	**(0.49)**
Health events: 0	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
	(.)	**(.)**	**(.)**	**(.)**	**(.)**	**(.)**
Health events: 1	**0.038**	**0.038**	**0.043**	**-0.018**	**0.009**	**-0.021**
	(0.15)	**(0.08)**	**(0.08)**	**(0.37)**	**(0.83)**	**(0.57)**
Health events: 2+	**0.056**	**0.075**	-0.116*	**-0.020**	**0.265**	**0.019**
	(0.53)	**(0.32)**	(0.04)	**(0.67)**	**(0.06)**	**(0.83)**
All events: 0	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
	(.)	**(.)**	**(.)**	**(.)**	**(.)**	**(.)**
All events: 1	**0.030**	**0.033**	**0.003**	**0.001**	**0.011**	**-0.034**
	(0.15)	**(0.06)**	**(0.90)**	**(0.97)**	**(0.79)**	**(0.31)**
All events: 2+	**-0.023**	**0.058**	**-0.028**	**-0.008**	**0.049**	**-0.005**
	(0.67)	**(0.17)**	**(0.50)**	**(0.82)**	**(0.60)**	**(0.94)**
Unemployment	**0.010**	**-0.011**	**-0.021**	**-0.013**	**-0.011**	**0.013**
	(0.67)	**(0.52)**	**(0.46)**	**(0.55)**	**(0.83)**	**(0.72)**
N	**4986**	**6398**	**3247**	**3701**	**3161**	**3786**

Conclusions

In this paper we examined whether personality traits and social attitudes can be used as predictors of resiliency to unemployment. We hypothesized that combination of personality traits can be used as proxies of different resilience factors. Especially, emotional stability, openness, and locus of control were used as proxied of coping abilities, tolerance, acceptance of change, meaningful life, competence personal structure and goal setting, and were grouped within the category of 'individual resilience'. Similarly, extroversion, altruism and trustworthiness were used to proxy social and emotional regulation and grouped as 'social resilience'. Both our measures of individual and social resilience predict a significant better adaptation to job loss, except for individual resilience for women. We demonstrated that personality can be considered as a protective factor against job loss. Since stability of personality traits remains a concern for researchers, we assessed the stability of all the traits we used within the SOEP, both in respect to age and to adverse life-events. Results show that none of the two issues represents a treat to our results.

This research opens the field to different developments. First, resilience has usually been measured in respect of a single personality trait per time. Our claim is that combination of different traits and attitude can predict resilience to different shocks. We expect different traits to protect people to other type of adverse life-events (like familiars or health-related). We focused on stable personality characteristics as resilience factors, however, these factors can be measured in different ways than personality. Some resilience scales consider health and intelligence as fundamental protective factors (see, for example, Rossouw & Rossouw, 2016).

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APPENDIX 1

PERSONALITY TRAITS STABILITY

The following graphs present the progression of each personality trait across six different cohorts.

EMOTIONAL STABILITY

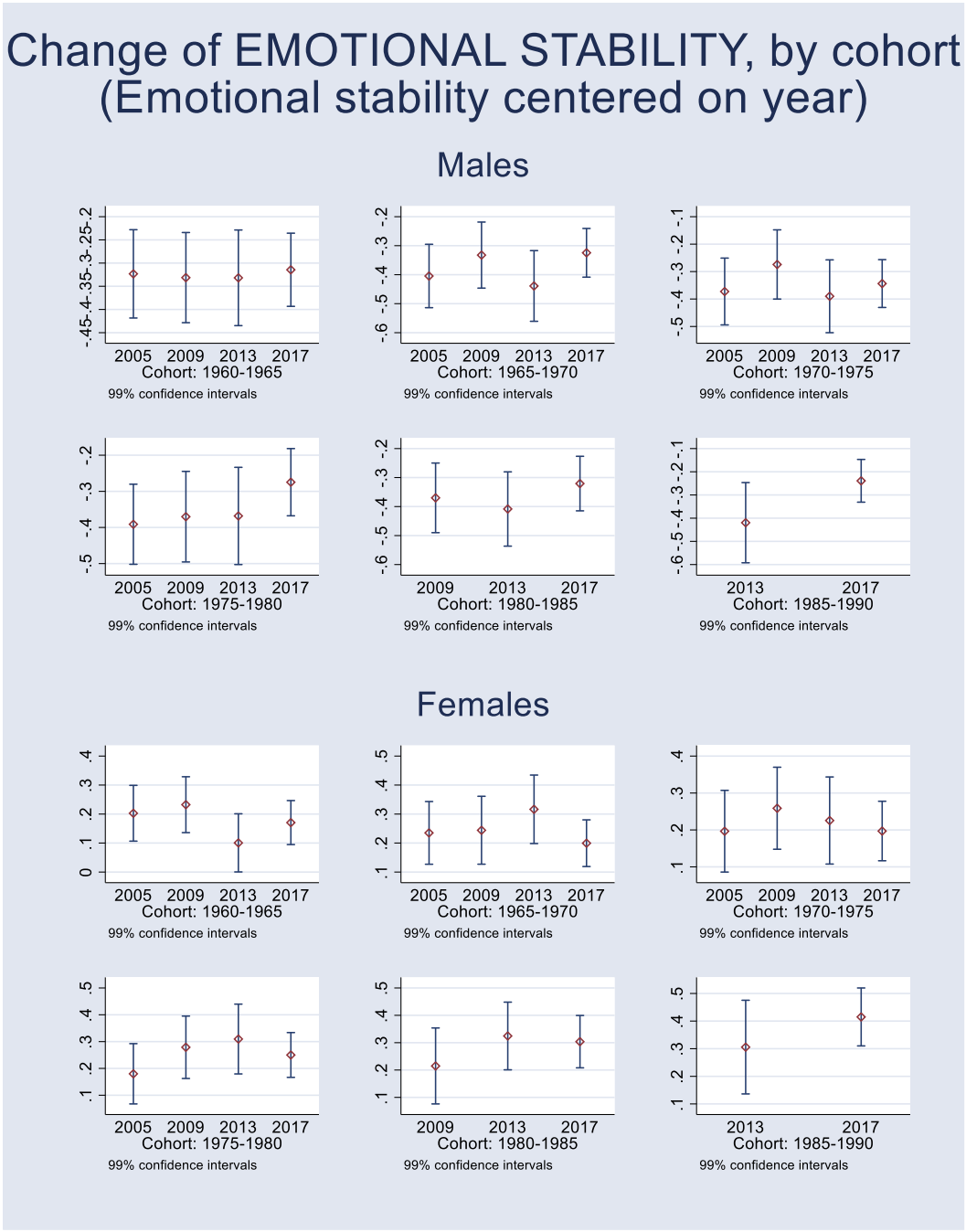

Figure 6. Emotional stability

OPENNESS

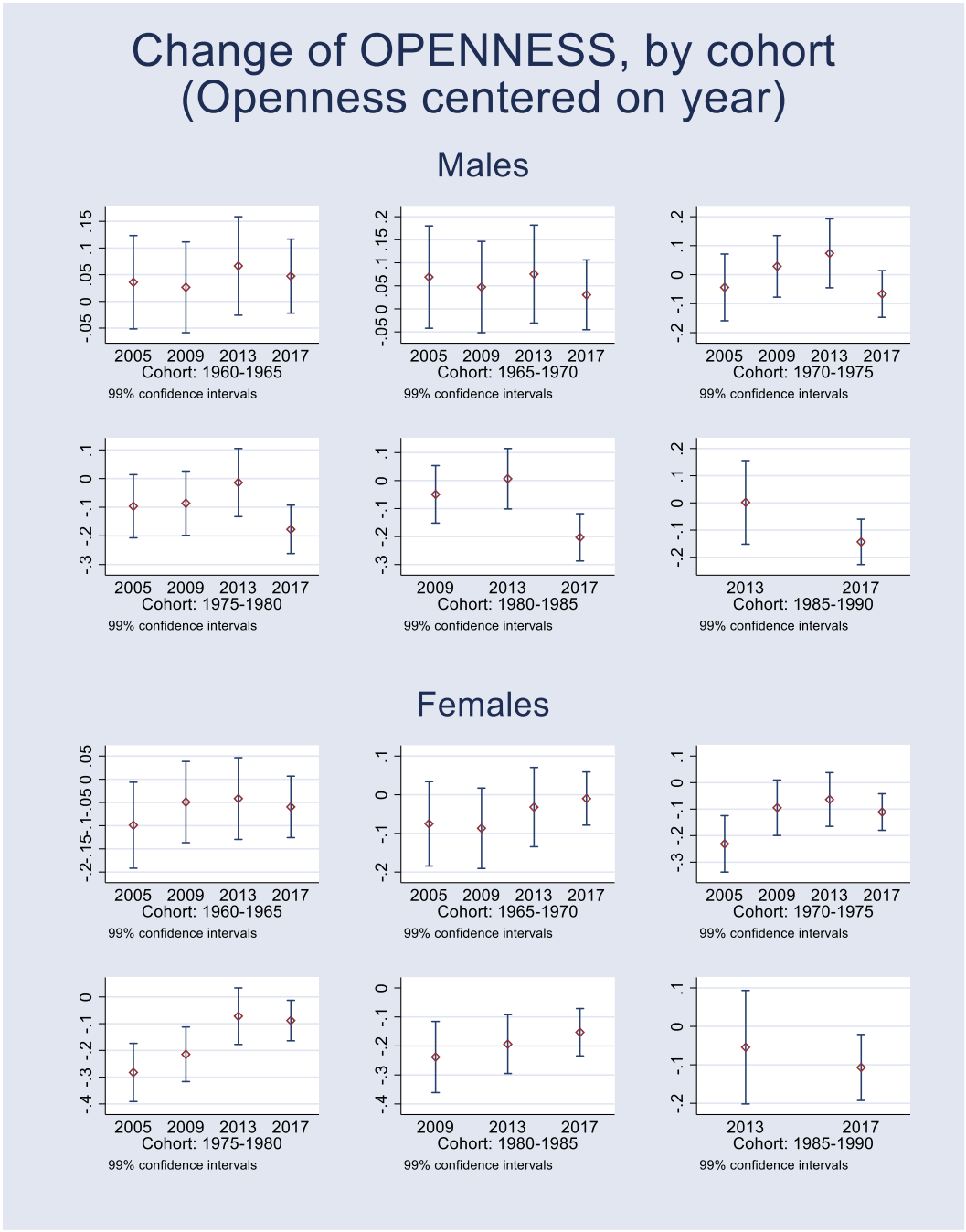

Figure 7. Openness

LOCUS OF CONTROL

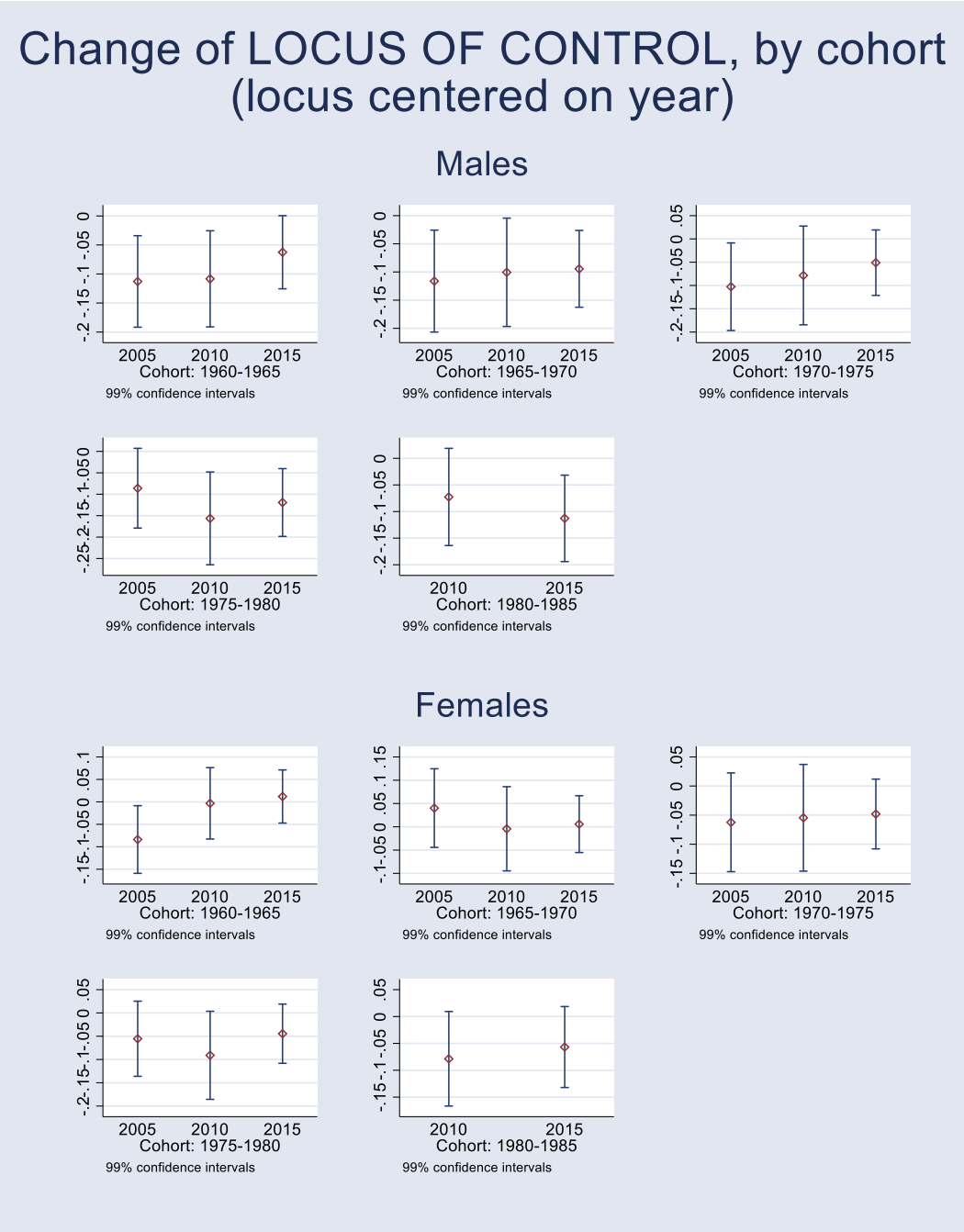

Figure 8. Locus of control

EXTRAVERSION

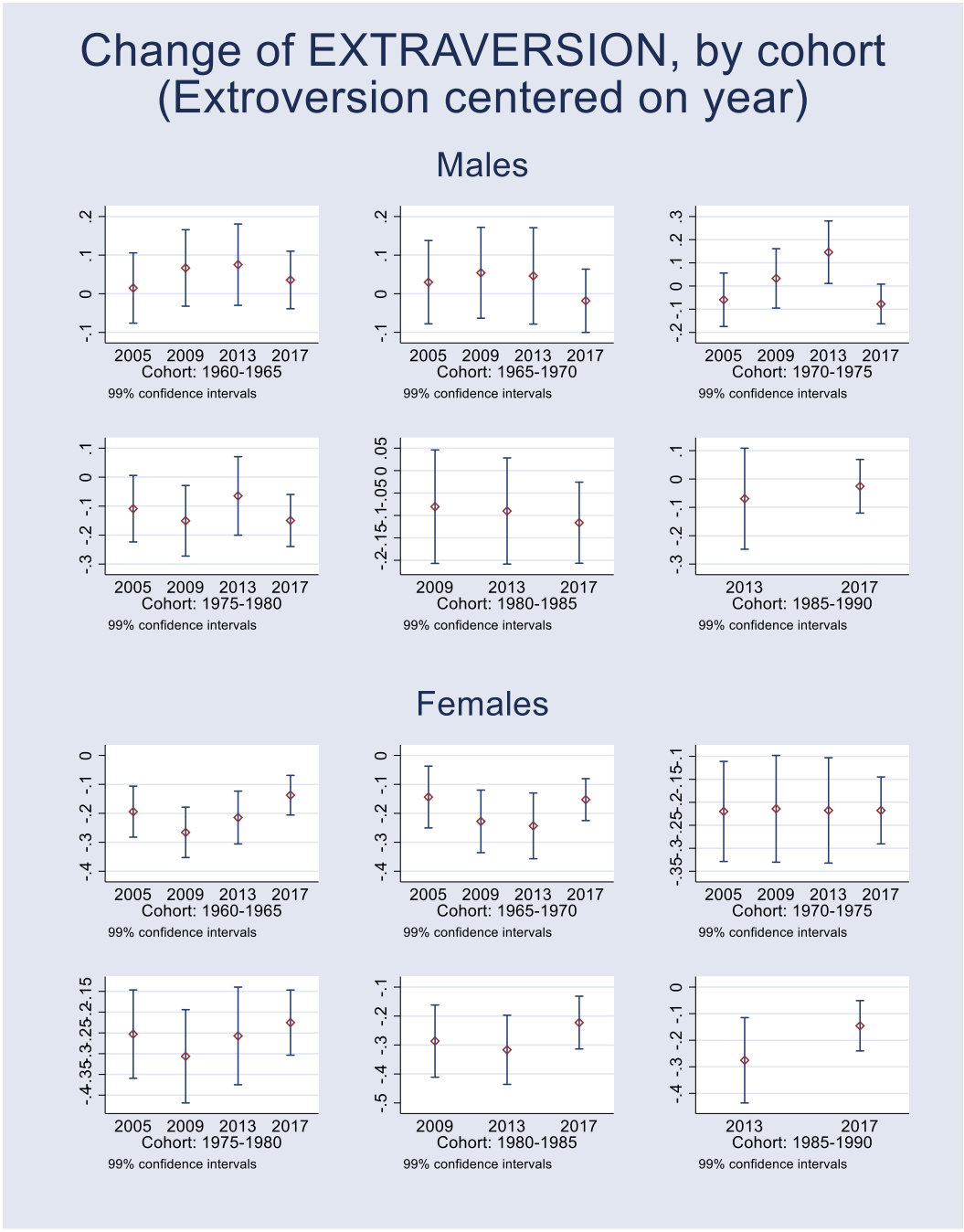

Figure 9. Extraversion

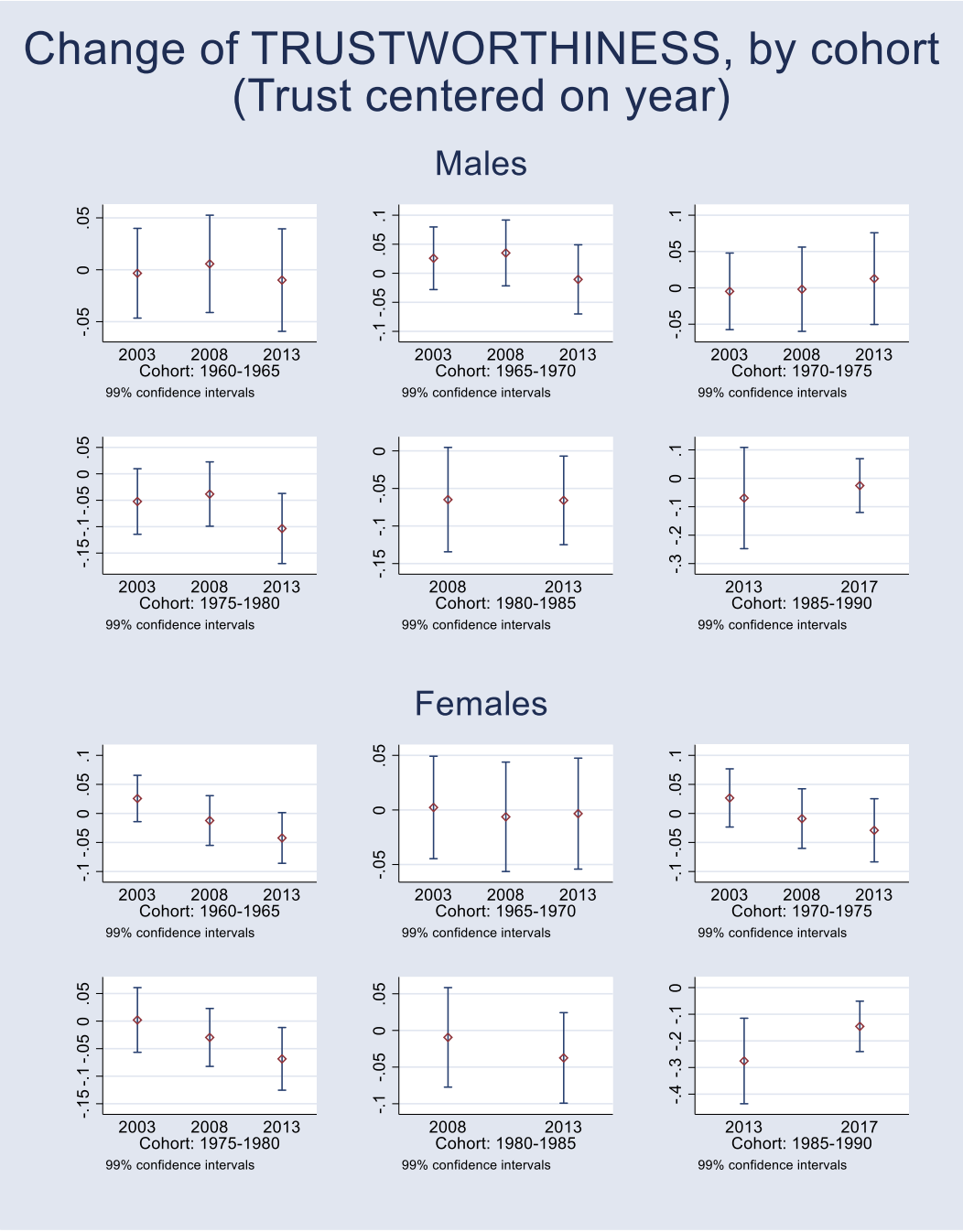

Figure 10. Trustworthiness

ALTRUISM

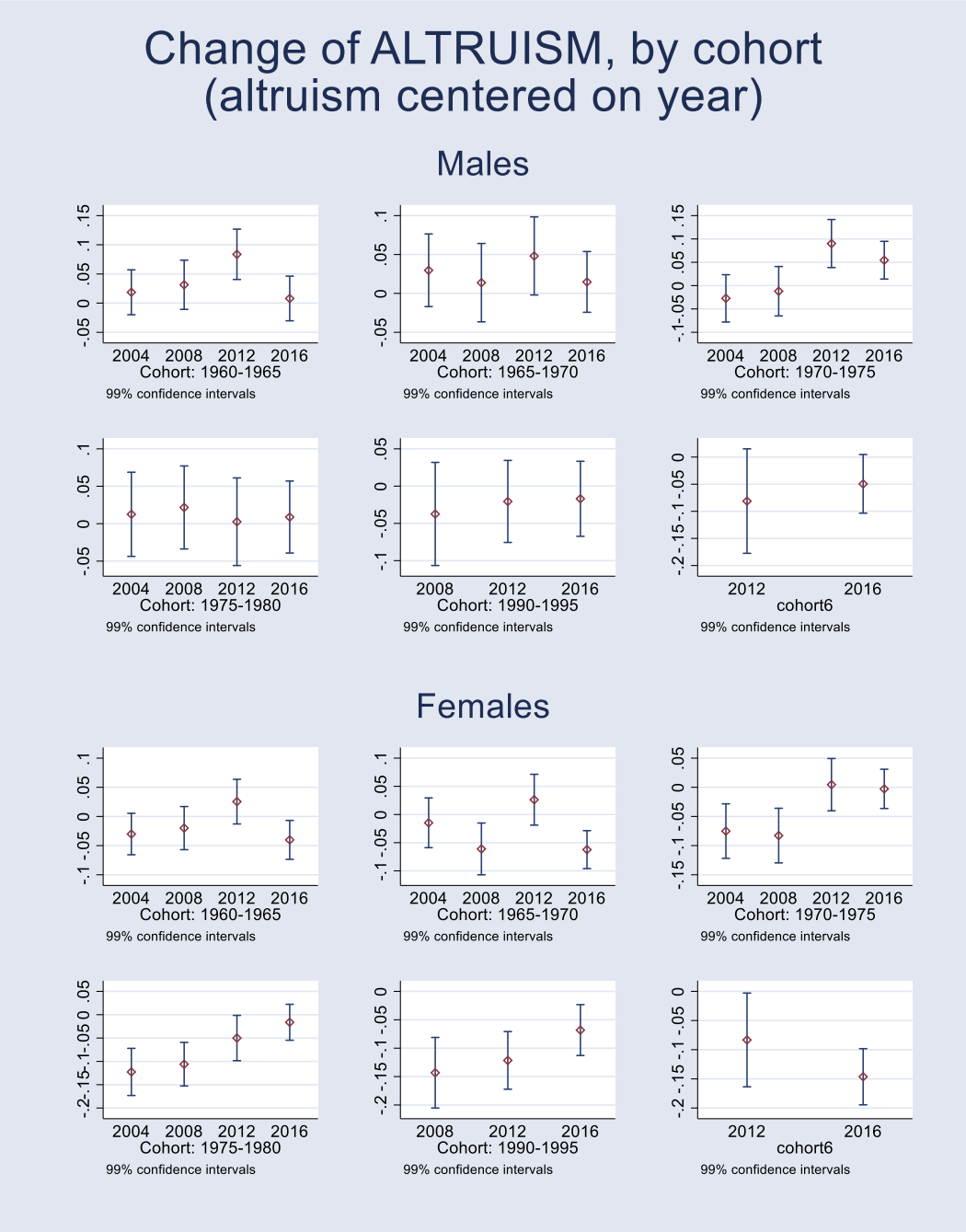

Figure 11. Altruism