



Neuroticism and Extraversion in youth predict mental wellbeing and life satisfaction 40 years later



Catharine R. Gale^{a,b,*}, Tom Booth^b, René Mõttus^{b,c}, Diana Kuh^d, Ian J. Deary^b

^a MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton, UK

^b Centre for Cognitive Ageing & Cognitive Epidemiology, Department of Psychology, University of Edinburgh, Edinburgh, UK

^c Department of Psychology, University of Tartu, Estonia

^d MRC Unit for Lifelong Health and Ageing, University College London, UK

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ABSTRACT

Neuroticism and Extraversion are linked with current wellbeing, but it is unclear whether these traits in youth predict wellbeing decades later. We applied structural equation modeling to data from 4583 people from the MRC National Survey of Health and Development. We examined the effects of Neuroticism and Extraversion at ages 16 and 26 years on mental wellbeing and life satisfaction at age 60–64 and explored the mediating roles of psychological and physical health. Extraversion had direct, positive effects on both measures of wellbeing. The impact of Neuroticism on both wellbeing and life satisfaction was largely indirect through susceptibility to psychological distress and physical health problems. Personality dispositions in youth have enduring influence on wellbeing assessed about 40 years later.

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1. Introduction

Wellbeing is predictive of a range of important life outcomes. Having a strong sense of wellbeing, defined in terms of greater positive affect or satisfaction with life, has been associated in prospective studies with greater success in work and relationships (Luhmann, Lucas, Eid, & Diener, 2013; Lyubomirsky, King, & Diener, 2005), lower mortality from all causes and cardiovascular disease (Chida & Steptoe, 2008), and healthier ageing as represented by slower physical (Ostir, Markides, Black, & Goodwin, 2000) and cognitive decline (Gerstorf, Lovden, Rocke, Smith, & Lindenberger, 2007) and a reduced likelihood of becoming physically frail (Ostir, Ottenbacher, & Markides, 2004). Understanding which factors influence wellbeing at older ages is therefore of considerable interest.

Many researchers now agree that wellbeing is best thought of as a multi-dimensional construct (Diener, 2003), although opinion remains divided as to which components should be part of this construct (Forgeard, Jayawickreme, Kern, & Seligman, 2011). Researchers favouring the hedonic perspective of wellbeing have concentrated on ‘subjective wellbeing’ or in colloquial terms, happiness. This has been conceptualized in terms of four main components: life satisfaction, satisfaction with important domains, positive affect, and low levels of negative affect (Diener, 2000).

According to Diener (2003) these components of wellbeing are moderately correlated with each other, yet each provides unique information about the subjective quality of an individual’s life.

Others take the view that wellbeing is not best captured by hedonic concepts of happiness alone (Ryan & Deci, 2001). The eudaimonic perspective of wellbeing—based on Aristotle’s view that true happiness comes from doing what is worth doing—focuses on meaning and self-realization, and defines wellbeing largely in terms of ways of thought and behavior that provide fulfillment. Researchers favoring the eudaimonic perspective have advanced various theoretical models of wellbeing incorporating a broad range of constructs (Kashdan, Biswas-Diener, & King, 2008). For example, according to Ryan and Deci’s Self-Determination theory there are three innate psychological needs—for autonomy, competence and relatedness—and the fulfillment of those needs leads to greater wellbeing (Ryan & Deci, 2000). Ryff’s theoretical model of Psychological wellbeing proposed that high levels of wellbeing required fulfillment on six dimensions that she named self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth (Ryff, 1989; Ryff & Keyes, 1995). Yet despite the traditional distinction between the hedonic and eudaimonic approach to defining wellbeing, empirical evidence using indicators of both suggests that there is considerable common variance between them, even though factor-analytic studies usually find that they load onto distinguishable, if correlated, factors (Kashdan et al., 2008). In a study that compared how scores on the Subjective Happiness Scale (hedonic wellbeing) and Ryff’s Psychological Wellbeing Questionnaire (eudaimonic

* Corresponding author. Address: MRC Lifecourse Epidemiology Unit, Southampton General Hospital, Southampton SO16 6YD, UK. Fax: +44 (0)23 80704021.

E-mail address: crg@mrc.soton.ac.uk (C.R. Gale).

wellbeing) correlated with acquaintance ratings, clinician judgments and directly observed social behaviors, there was remarkable consistency in the pattern of correlates of the two wellbeing measures (Nave, Sherman, & Funder, 2008).

In the last few years there has been increasing interest in developing measures of wellbeing that integrate the hedonic and eudaimonic perspectives (Michaelson, Abdallah, Steuer, Thompson, & Marks, 2009). One such measure is the Warwick-Edinburgh Mental Wellbeing Scale (Tennant et al., 2007). The scale was developed by an expert panel with a view to assessing positive mental health rather than mental illness in population surveys, hence the use of the term 'mental wellbeing'. It was designed to cover a broad concept of wellbeing, including affective or emotional aspects, cognitive or evaluative aspects, and psychological functioning. Confirmatory factor analysis suggests that the scale measures a single construct (Tennant et al., 2007).

There is extensive evidence of associations between personality traits, particularly Neuroticism and Extraversion, and contemporaneous scores on various measures of wellbeing in adults (Deneve & Cooper, 1998; Schmutte & Ryff, 1997). People who are lower in Neuroticism or higher in Extraversion tend to report greater wellbeing. Similar associations between these traits and current wellbeing have also been observed in adolescents (Garcia, 2011; Richards & Huppert, 2011). Individual differences in these personality traits in adults show considerable stability over time (Matthews, Deary, & Whiteman, 2009): for instance, one study that examined test-re-test correlations of ratings on the NEO Personality Inventory after a 7 year interval found correlations of .67 for Neuroticism and .81 for Extraversion (Costa & McCrae, 1992). A meta-analysis of estimates from 152 longitudinal studies suggests that the magnitude of rank-order stability of personality traits in childhood or adolescence is lower than that found in adulthood; meta-analytic estimates of mean test-re-test correlations were .30 in childhood and .54 in late adolescence (Roberts & DelVecchio, 2000). These observations raise the question as to whether assessment of Neuroticism and Extraversion, even in youth, might predict wellbeing many years later.

In subsets of participants aged between 35 and 95 years from the Baltimore Longitudinal Study of Aging who had completed personality measures several years earlier there were correlations between Neuroticism and scores on a depression symptom scale of .42 after an interval of 10–15 years ($n = 266$), and .40 after an interval of 12–31 years ($n = 194$) (Costa & McCrae, 1996). The authors wrote, "That dramatic prediction of a mood score from a personality measure obtained an average of 26.5 years earlier is testimony to the enduring influence of personality traits on human emotions." In other subsets from the Baltimore Longitudinal Study of Aging there were correlations between Neuroticism and facets of Extraversion and later scores on measures of wellbeing, and many of these long-term correlations were not very different in magnitude from contemporaneous measures. For instance, the correlation between Neuroticism and scores for Satisfaction with Life was $-.33$ after an interval of 12–22 years (Costa & McCrae, 1984). These observations are consistent with results from the small number of other longitudinal studies that have investigated correlations between these personality traits and subsequent wellbeing (Deneve & Cooper, 1998).

But striking though these observations are, uncertainties remain about the long-term relation between personality traits and mental wellbeing. Nearly all the prospective investigations to date have been based on small numbers and the statistical analysis has been restricted to bivariate correlations of each personality trait separately so no account was taken of the fact that trait contributions may not be independent (Deneve & Cooper, 1998). In a large UK study, the Neuroticism scale of the NEO Five Factor Inventory correlated .40 with the Extraversion scale (Egan, Deary, & Austin,

2000), confirming the importance of examining the effect of both traits simultaneously.

Furthermore, there has been little investigation of the role of potential mediating factors. Systematic reviews of prospective studies have demonstrated that Neuroticism and Extraversion are predictive of a range of life outcomes other than wellbeing, among them occupational attainment, community involvement, and marital outcomes (Ozer & Benet-Martinez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). There is a weight of evidence linking Neuroticism in particular with risk of psychological distress, somatic complaints and poorer perceived health (Charles, Gatz, Kato, & Pedersen, 2008; Costa & McCrae, 1987; Jerram & Coleman, 1999; Lahey, 2009; Ozer & Benet-Martinez, 2006; Roberts et al., 2007). Greater Neuroticism has also been linked with increased risk of specific chronic diseases, among them coronary heart disease (Friedman & Boothkewley, 1987) and the metabolic syndrome (Phillips et al., 2010) and of earlier death (Ozer & Benet-Martinez, 2006; Weiss, Gale, Batty, & Deary, 2009), though the latter is not a consistent finding. Greater Extraversion, by contrast, has been associated with better perceived health (Goodwin & Engstrom, 2002) and there is some evidence to link it with longevity (Friedman et al., 1995; Iwasa et al., 2008), though other studies have not found such an association (Chapman, Fiscella, Kawachi, & Duberstein, 2010).

Therefore, any associations between Neuroticism and Extraversion and subsequent mental well-being may be at least partially mediated through psychological distress, physical health or occupational attainment. These personality traits affect susceptibility to states of psychological distress, possibly via shared neurobiological risk factors or because they capture aspects of behaviour or thought, separate from the experience of psychological distress, that influence vulnerability to distress (Duggan et al., 2003; Foster & MacQueen, 2008). There is some evidence to link childhood measures of Extraversion, though not Neuroticism, with physical activity and smoking in adult life, both of which might influence risk of physical health (Hampson, Goldberg, Vogt, & Dubanoski, 2007). Effects of Neuroticism on later physical health might be explained by biological mechanisms, such as dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis in response to stress (Phillips, Carroll, Burns, & Drayson, 2005). Both these personality traits may influence occupational attainment via their effect on ambition (Judge & Kammeyer-Mueller, 2012) or on attitude to work (Thoresen, Kaplan, Barsky, Warren, & de Chermont, 2003).

While wellbeing and psychological distress tend to inversely correlated, it is now established that 'positive' wellbeing and 'negative' wellbeing or psychological distress are to some degree independent of each other (Diener & Emmons, 1984; Huppert & Whittington, 2003), as indicated by the findings that wellbeing is predictive of various health outcomes after controlling for the presence of depression (Chida & Steptoe, 2008; Gerstorf et al., 2007; Ostir, Markides, Peek, & Goodwin, 2001; Ostir et al., 2000; Ostir et al., 2004). As a result, we consider it appropriate to see psychological distress as one potential mediator between stable personality traits and well-being.

We used data on 4583 men and women from the United Kingdom's Medical Research Council (MRC) National Survey for Health and Development (the 1946 birth cohort) (Kuh et al., 2011). They completed assessments of Neuroticism and Extraversion at ages 16 and 26 years and were followed-up for multi-dimensional assessment of wellbeing at age 60–64 years. Our aims were to use structural equation modelling to examine the simultaneous effects of Neuroticism and Extraversion in adolescence and young adulthood on wellbeing in later life. An important aspect of the current study was to take advantage of the long-term longitudinal data available on this cohort to test the extent to which any such

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