

CHAPTER 28

Personality Development and Health

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It is health that is real wealth and not pieces of gold and silver.
—MAHATMA GANDHI

When it comes right down to it, health is everything: “Without health life is not life” (attributed to the Buddha). The overwhelming significance of staying healthy may not be uppermost in our minds when we are young, unless we have the misfortune to fall seriously ill in childhood or youth. Ill-health often seems to strike, meteor-like, from out of nowhere. Yet modern science tells us that the seeds of many diseases may be found in our genes, our lifestyles, and our personalities. The idea that our personalities can influence our health has a long history, but it’s only recently that strong scientific evidence for this link has accumulated. It is a complex association, with numerous intervening links forming a chain from personality to health or illness through several intermediate steps such as stress and behavior. Making the connection between personality and health does not mean that we are to blame for our diseases, but it does give us insights into how we might be able to alter our health trajectory.

In this chapter, I examine how personality development can influence health, and how health can influence personality development. In McAdams’s integrative theory of personality and self, a child develops from being a social actor to a motivated agent and an autobiographical author, to eventually become an adult who integrates all three of these components into the self (Hooker & McAdams, 2003; Mc-

Adams, 2013). Much of the evidence for the link between personality and health is based on personality trait research (personality as actor), but I also consider goals (personality as agent, agentic personality), and the relation between health and autobiography (personality as author). Personality trait research is dominated by the five-factor model (McCrae & Costa, 2008), also referred to as the Big Five framework (John, Naumann, & Soto, 2008), for assessing personality in terms of broad and relatively independent domains: extraversion, agreeableness, conscientiousness, emotional stability (vs. neuroticism), and openness to experience (also called intellect/imagination). Other traits have been studied in relation to health, including optimism, pessimism, sensation seeking, and various measures of self-control that are similar to conscientiousness. These traits can be conceptually related to the five-factor framework, which has proved to be a valuable organizing tool in personality and health research (Turiano, Chapman, Gruenwald, & Mroczek, 2015).

When studying the link between personality traits and health, it is important to consider that both sides of the equation are moving targets. Health changes can be sudden, but the onset of chronic diseases such as Type 2 diabetes are usually the result of metabolic changes taking place over years or decades. Similarly, personality traits change across the life course. We are

learning that personality development seems to parallel other areas of human development. Just like our physical development, personality traits undergo dramatic changes in childhood and youth, then stabilize somewhat in adulthood before changing more rapidly again in old age (Specht et al., 2014). The comparison is so pronounced that normative personality development across childhood and youth has been described as following the “maturity” principle (Hogan & Roberts, 2004; Roberts, Wood, & Caspi, 2008). In their meta-analysis, Roberts, Walton, and Viechtbauer, (2006) compared mean levels of traits in samples that differed by age and found that the maturational trend over the first 30 or so years of adulthood is for people to become less neurotic, and more dominant (a part of extraversion), agreeable, and conscientious, whereas in old age, they become less open to experience and have less social vitality (another extraversion facet).

As with traits, the goals and motives of agentic personality also change across the lifespan (Heckhausen & Wrosch, 2016). Health goals become more central with age, particularly with the onset of chronic disease, and older people’s goals are likely to become less ambitious. Having a health goal, such as to exercise more, implies that one has control over one’s action. The importance of belief in control is at the heart of Heckhausen, Wrosch, and Schulz’s (2010) lifespan theory of control, in which they argue that we are motivated to exert control over the developmental challenges that come with aging. We do so through a range of control strategies, some designed to help us achieve specific goals, such as directing resources to the goal (joining a health club), whereas other strategies may involve self-protective goal disengagement (e.g., no longer aiming to complete a half marathon but settling for the 5K run instead). Similarly, the autobiographical self changes with time as a result of experiences and reevaluation. The onset of illness can be a life-changing event that causes a major reappraisal of one’s identity.

The causal relation between personality and health runs in both directions: Personality influences health, and health influences personality. Studies generally cannot yield definitive findings about the direction of the association, but some study designs permit stronger inferences than others. Cross-sectional studies have uncovered many interesting associations between personality and health, but they cannot lead to strong conclusions about the direction of

causality. Longitudinal studies are more compelling and are used exclusively in this chapter. When significant associations are found between personality measured some time prior to the assessment of health status, after controlling for obvious confounds (e.g., gender and education), then a stronger inference can be made that personality has had an effect on health. Similarly, if personality is assessed after a significant health event, it may suggest that the event influenced personality. Given that both personality and health change over the lifespan, a more sophisticated design is to measure them both on multiple occasions and investigate the relation between change in one and change in the other. Nevertheless, all of these study designs are observational, not experimental, so they cannot provide unambiguous answers about the direction of causality. In addition, there is always the possibility that personality change and health change are the result of an underlying influence not included in the study (the so-called “third variable” explanation) that gives rise to a spurious association, in which case there would be no causal relation between personality and health.

The selection of findings on personality development and health presented here emphasizes studies relating personality traits to objective assessments of physical health. Self-reported disease status and general health are also widely used in personality and health research. However, self-reports can be less accurate than more objective measures, such as a medical diagnosis or the results of a laboratory test. Self-reports are subject to biases, including personality biases. For example, people who are more neurotic tend to report more symptoms (Costa & McCrae, 1987). Objective assessments of health refer to measures such as blood pressure, heart rate, height, and weight taken by a qualified clinician; they also include laboratory assays of biological materials such as blood and urine. These measurements are commonly referred to as “biomarkers.” An undisputable objective indicator of health is vital status (alive or dead), and longevity is used as a health outcome in some longitudinal studies of personality and health.

The chapter is organized as follows. The first sections sum up findings on the prospective association between personality assessed at one stage in life and health assessed at a later stage. Next, studies of personality change in relation to health, and health change in relation to personality, are considered. Then I look at whether

there are interventions to change the course of personality development to lead to better health outcomes. Finally, I draw some conclusions about the possibilities offered by the changing nature of personality to improve health.

Personality in Childhood and Adolescence in Relation to Later Health

The idea that a child's personality is linked, perhaps causally, to his or her health as an adult may seem quite a stretch. To illustrate with an extreme but, sadly, all too real example, we may remember a classmate in elementary school who was a rule-breaker, always getting into trouble and doing risky things. How did life turn out for that classmate? In personality terms, we could describe him or her as sensation seeking: someone who seeks out thrills and adventure, and acts impulsively. On the Big Five dimensions, he or she might be high on extraversion, low on conscientiousness, and perhaps emotionally unstable. Based on research on predictors of substance use, we know that he or she was at increased risk of smoking cigarettes and drinking alcohol as a preteen, using marijuana in his or her early teens, and possibly going on to hard drug use. Tragically, as a young adult, he or she may have died in a drunk-driving accident, or from a drug overdose. If the classmate survived these youthful hazards, he or she may have developed lung cancer later in life, caused by a lifetime addiction to cigarettes, or liver disease from heavy drinking. This is an extreme example. Childhood personality pathways to adult health outcomes are likely to be less dramatic. Over time, modest personality influences may be associated with the development of more or less healthy habits, and personality traits may interact with environmental factors, such as exposure to stress, leading to slow but insidious effects on later health.

In childhood, roughly defined as elementary school grades 1–6 (ages 6–12 years), children's personalities are typically assessed by observers such as teachers or parents because children's self-reflective capacity is limited. At this age, personality undergoes changes, as has been shown by comparing trait stability measured by rank-order correlations within different age groups. The rank-order correlation coefficient measures the degree of similarity between the relative standing of members of a sample on a trait at one time compared to another. Rank-

order stability indicates the extent to which an individual maintains his or her position in a group: Is the most talkative kid in the class in elementary school the most talkative teen in high school? These correlations are lower for children than for adults across the same time interval, but they are far from negligible. In their analysis of 152 studies, Roberts and DelVecchio (2000) reported a rank-order stability correlation for children ages 6–12 years between .40 and .50, whereas for adults ages 50–59, it was over .70. Rank-order stability is different from the mean-level stability, which describes the extent to which the average level of a trait in a population changes across times of measurement and is indicative of normative, maturational trends. Given that childhood personality traits are undergoing maturational and idiosyncratic change, is it possible that trait levels assessed on one occasion in childhood can tell us anything about future health? The surprising answer is "yes."

Two studies demonstrated that childhood personality traits assessed in elementary school predict clinical health status in young adulthood (Moffitt et al., 2011) and middle age (Hampson, Edmonds, Goldberg, Dubanoski, & Hillier, 2013). In both studies, health status was measured by combinations of biomarkers indicative of cardiovascular and metabolic disease risk, such as lipid levels, blood glucose, and waist size. Childhood traits even predict longevity (Friedman et al., 1993). Childhood personality scores were derived in different ways across these studies: by a comprehensive assessment of parent-, teacher-, and self-reports combined across multiple assessments (Moffitt et al., 2011); by combined parent and teacher ratings (Friedman et al., 1995); and by teachers' impressions of the child formed over an entire school year (Hampson et al., 2013). Nevertheless, the strongest and most consistent associations with health outcomes found in these studies were for traits of childhood conscientiousness. The broad domain of personality labeled *conscientiousness* includes important characteristics such as self-control, persistence in the face of challenges, planning ahead, and being organized. Such qualities promote a range of positive life outcomes, including health.

These studies demonstrated associations across decades between childhood traits in the Big Five domain of conscientiousness and health in adulthood, after controlling for confounding variables such as educational attain-

ment and gender. Importantly, childhood conscientiousness predicts health outcomes even after removing the influence of adult conscientiousness. At least two independent studies have demonstrated that regardless of their level of conscientiousness in adulthood, conscientious children are more likely to be healthier adults, as indicated by a combination of cardiovascular and metabolic biomarkers (Hampson et al., 2013), and by longevity (Martin, Friedman, & Schwartz, 2007). The maturational trend (mean level change) suggests a decline in conscientiousness in childhood and adolescence followed by increases in adulthood (Soto, John, Gosling, & Potter, 2011). However, conscientiousness shows modest rank-order stability across time. In the Hawaii Longitudinal Study of Personality and Health, the correlation between conscientiousness measured in childhood at about age 10 and 40 years later was $r = .25$ (Edmonds, Goldberg, Hampson, & Barkley, 2013; Hampson & Goldberg, 2006). Using data from the ongoing Dunedin Multidisciplinary Health and Development Study, Moffitt and colleagues (2011) obtained a slightly higher correlation of $r = .30$ for self-control assessed across a shorter time span from childhood to young adulthood, and Martin and colleagues (2007) observed a somewhat lower correlation of $r = .15$ for participants in the Terman Life Cycle study between child and adult conscientiousness averaged across measures 18 and 28 years later. These comparatively low levels of rank-order stability reflect the length of time between assessments and the age span, which encompassed the period of maximum developmental change (i.e., childhood to adulthood).

The long-lasting influence of childhood conscientiousness on health, regardless of later conscientiousness, suggests that there may be something special about this trait during the elementary school years. Epidemiologists describe this type of time-limited effect as a critical or sensitive period for exposure to a particular risk factor (Lynch & Davey Smith, 2005). They are typically concerned with an external influence such as poverty. Here, we can extend the idea to an internal influence, namely, the level of a particular personality trait. It may be the case that childhood is a critical period for laying down patterns of behavior and their biological effects that endure into adulthood. Childhood conscientiousness may foster healthy habits, such as participating in active hobbies, and practicing dental hygiene. On the other hand, personality

traits such as lack of self-control may result in behaviors that increase the probability of exposure to dangerous or traumatic situations and adversely affect health through long-lasting biological consequences of stress. Investigating these kinds of links in the chain from childhood personality to adult health outcomes is one current direction in personality and health research (Shanahan, Hill, Roberts, Eccles, & Friedman, 2014).

A somewhat different approach to studying childhood personality and health is illustrated by the Cardiovascular Risk in Young Finns (CRYF) study, which is an ongoing investigation of risk factors for cardiovascular disease in a representative sample ages 3–18 at recruitment. The investigators combined a variety of environmental and individual psychosocial risk factors, including parent's ratings of their child's self-regulation, into a summary score. In effect, this score collapsed a series of variables that could be seen as related in a causal chain into a single index. The summary score predicted a composite measure of cardiovascular health assessed by self-report and clinical measures 27 years later (Pulkki-Råback et al., 2015). In addition, children's self-regulation alone predicted cardiovascular health, consistent with other studies that have measured the related concepts of self-control and conscientiousness.

Adult Personality in Relation to Later Health

Young Adulthood

Young or “emerging” adulthood (roughly ages 18–30) is a period of continuing physical and psychological development that has been singled out as a development period in its own right that lies between adolescence and adulthood (Arnett, 2000). Young adults in this age group explore relationships and career choices with varying degrees of success, and their experience in these roles may lead to personality changes. Investment in social roles such as marriage and parenthood has been associated with normative personality development in some (e.g., Roberts & Wood, 2006) but not all studies (e.g., van Scheppingen et al., 2016).

Despite personality change in young adulthood, personality measured during this time can predict later health outcomes. College students have long provided a ready sample for psychological research, including studies of personality and health. In the middle of the

previous century, the Grant Longitudinal Study was initiated with a sample of healthy and successful male Harvard undergraduates. They were first assessed as undergraduates between 1938 and 1942, then followed up repeatedly with self-report and objective assessments of physical and psychological health. This classic study is well described in Vaillant's (1977, 2012) engaging books. The Harvard study, like the Terman Life Cycle Study, continues to offer rich opportunities for researchers, who can conduct new analyses on these old and valuable data to test current hypotheses. For example, Peterson, Seligman, and Vaillant (1988) measured pessimistic explanatory style by content analysis of reports of their World War II experiences obtained from a subset of the Harvard men. They related this measure of pessimism to the men's physical health assessed by doctors every 5 years until age 60. Those who were more pessimistic had worse health in later life, controlling for baseline health. Moreover, pessimistic style predicted decreases in health from one assessment to the next. This is one of the first studies to show that a personality characteristic measured at one time was associated with subsequent health change measured over a series of assessments. In the Big Five framework, the dimension of optimism is probably associated with aspects of all of the Big Five except openness/intellect (Sharpe, Martin, & Roth, 2011).

More recent studies of young adults also emphasize the significance of predicting health change from personality characteristics. The Dunedin Study demonstrated the influence of personality traits measured during young adulthood on later health change (Israel et al., 2014). Lower levels of conscientiousness and openness measured by observer ratings at age 26 were associated with decreases in clinically assessed health (a combination of biomarkers) from ages 26 to 38, controlling for numerous other risk factors. As the researchers noted, this is a powerful demonstration of the influence of personality on health because these traits prospectively predicted health change, similar to the findings for pessimism in the Harvard study. In a comparable design, in the CRYF, two personality traits of young Finns ages 24–39 at baseline predicted their weight gain over the subsequent 6 years (Hintsanen et al., 2012). Higher novelty seeking predicted weight gain for men and women, and lower reward dependence (i.e., being less empathic, sentimental, and sensitive to social cues) predicted weight gain for women

only. The latter finding is somewhat surprising, but it might be that those women with lower reward dependence were less concerned with the social rewards of maintaining their weight.

Studying the long-term implications for health of personality assessed in children, youth, and young adults requires a major investment of resources, so, not surprisingly, there are relatively few such studies. Although these studies inevitably did not include personality measures that are now considered state of the art, their data can either be reanalyzed to provide measures aligned with the five-factor model (Martin & Friedman, 2000), or their measures can be interpreted within this framework (Peterson et al., 1988). By reanalyzing these valuable data to address contemporary research questions, they continue to provide insights into the association between early personality and later health (Kern, Hampson, Goldberg, & Friedman, 2014).

Adulthood

The period from around ages 30–60 is when there is comparatively little personality development and rank-order stability of personality traits reaches its peak (Specht et al., 2014). Based on the hypothesis that personality exerts a sustained, prospective influence on health outcomes, studies limited to this age range are expected to yield the strongest associations between personality and health. A stable level on a trait such as conscientiousness over years or decades may have cumulative benefits for the individual through, for example, the maintenance of good health practices that provide high levels of cardiovascular and metabolic protection.

Mortality is the ultimate hard endpoint for longitudinal studies of adult health. There is by now compelling evidence to indicate that the personality trait of conscientiousness is a prospective predictor of longevity: Adults who are more conscientious are likely to live longer than those who are less conscientious. This evidence for adults confirms the dramatic findings for childhood conscientiousness in the Terman Life Cycle Study first reported by Friedman and colleagues (1993) over 20 years ago. The evidence for adults comes from individual studies (e.g., Hagger-Johnson et al., 2012; Terracciano, Löckenhoff, Zonderman, Ferrucci, & Costa, 2008), and meta-analyses that combine findings across multiple studies. A meta-analysis of 20 independent samples including nearly 9,000 people established a pooled correlation of $r = .11$ be-

tween conscientiousness and mortality (Kern & Friedman, 2008). This effect may not seem high, but it is greater than the effect of aspirin on reducing the risk of heart disease, and the effect of intelligence on mortality risk (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Another meta-analysis of over 76,000 individuals from seven different cohort studies, with a mean age of 50.9 years at the time of personality measurement, found that conscientiousness was the only one of the Big Five traits to predict all-cause mortality (Jokela et al., 2013). Those in the lowest tertile for conscientiousness had a 34% increased risk of dying compared to those in the top two tertiles. Other Big Five traits that have been associated with mortality risk, but less consistently, are neuroticism and hostility (low agreeableness), and a few studies have found extraversion to increase and openness to experience to decrease mortality risk (Ferguson & Bibby, 2012; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007; Turiano, Spiro, & Mroczek, 2012).

Personality Development and Personality–Health Mechanisms

Personality and health researchers are investigating mechanisms that may explain the association between personality traits and health outcomes that have been observed across the lifespan (Hampson, 2012; Hill, Turiano, Hurd, Mroczek, & Roberts, 2011; Turiano et al., 2015). For example, a conscientious person may be more likely to have a healthy lifestyle than an unconscientious person. The conscientious person will take the steps that are necessary to exercise regularly and have healthful food available at home. He or she will have sufficient perseverance to stick with exercise goals, and enough self-control to resist those high-fat, high-sugar, high-salt foods deliberately designed to tempt us. Healthful habits sustained over adult life reduce the likelihood of developing chronic, life-threatening conditions such as diabetes and heart disease, and childhood conscientiousness appears to set us on the path to acquiring and maintaining those habits and enjoying the ensuing health benefits (Hampson, Edmonds, Goldberg, Dubanoski, & Hillier, 2015).

Health-behavior mechanisms only provide a partial explanation for the association between personality and health, leaving room for other possible processes to be involved. Stress is one

such process through which personality influences may operate (Hampson et al., 2016). Luo and Roberts (2015) found that changes in conscientiousness, stress, and self-reported health studied over 3 years were associated. These changes suggested a stress mechanism in which higher conscientiousness protected a person from experiencing stress, which in turn protected his or her health. More research relating changes on traits, health outcomes, and potential mechanisms can be expected in the future as investigators try to pinpoint more precisely the possible causal relations among these variables.

The studies described so far have suggested that regardless of the age at which personality was measured, the trait of conscientiousness, and ones conceptually similar to it, have been the most consistently related to later morbidity and mortality. This reliable and replicable prospective finding suggests that conscientiousness may be causally related to health, and mechanisms for this influence have been examined. However, these studies do not fully consider the possible impact of personality development on health. They demonstrated that being more conscientious at a certain age conferred a future health benefit, but they do not consider the effects of personality change on health. If a trait is indeed causally related to a health outcome, then changes on the trait should be associated with corresponding changes on that outcome. I consider in the next part of this chapter studies that offer the possibility for stronger causal inferences because they have examined personality change.

Personality Change and Health

Change in Adulthood

Developmental changes in the direction of personality maturation (increasing agreeableness, conscientiousness, and extraversion, and decreasing neuroticism) may be beneficial for health. These maturational changes in the socially desirable direction may result in better health because of greater conformity to good health practices, and less stress resulting from negative social interactions or other events precipitated by undesirable traits.

A study of over 11,000 Australians indicated that socially desirable personality change is associated with health improvements (Magee, Heaven, & Miller, 2013). The Big Five per-

sonality traits and self-reported health were measured on two occasions, 4 years apart. Increases in extraversion and conscientiousness, and decreases in neuroticism were associated with better health. A strength of this study was that personality and health were each measured at the two time points, so that both personality change and health change could be examined. In a study that had a longer follow-up period of 10 years, Turiano, Pitzer, and colleagues (2012) used data from the Midlife in the United States (MIDUS) study to relate personality change to self-reported health. Big Five personality traits were assessed on two occasions 10 years apart, and health was assessed by self-report on the second occasion. As in the study by Magee and colleagues (2013), becoming more conscientious and less neurotic was associated with better health but, in addition, becoming more agreeable was associated with poorer health. This finding indicates that socially desirable changes in personality may not necessarily translate into health benefits. For example, a person who becomes more agreeable over time may be more willing to provide care for a family member with developmental disability or dementia. Caregivers are at higher risk of developing their own physical and mental health problems (Schulz & Sherwood, 2008). In a similar vein, more empathic parents caring for adolescent children had higher levels of inflammation than less empathic parents (Manczak, DeLongis, & Chen, 2016). Empathy is a personality trait that overlaps with agreeableness and conscientiousness (Melchers et al., 2016).

Researchers are only beginning to study the mechanisms by which personality changes are related to health changes. If traits influence health through behaviors, then trait change may be related to behavior change and, hence, health change. In a study conducted with a community sample over 3 years, Takahashi, Edmonds, Jackson, and Roberts (2012) observed that increases in conscientiousness were associated with increases in health-enhancing behaviors and self-reported health. However, a recent meta-analysis produced different results. Data from seven longitudinal studies indicated that individuals' health-enhancing behavior did not increase and decrease in concert with increases and decreases in their conscientiousness (Jokela, 2016). There are several possible reasons for this null finding, such as differences in the measures of conscientiousness across the different studies, but this analysis is a reminder of how

much more there is to discover about mechanisms of personality, behavior, and health change over the life course.

If desirable trait change can be associated with poor health, then personality change per se may be related to health outcomes. Is it possible that absolute trait change in adulthood is damaging for health? Another study using MIDUS data illustrates this possibility. Human and colleagues (2013) related personality change over two assessments 10 years apart, to self-reported health, and to the metabolic syndrome objectively assessed at the time of the second personality assessment. The metabolic syndrome is a constellation of biomarkers such as waist circumference, blood pressure, and fasting blood glucose, which indicates risk of cardiovascular disease and diabetes. Trait change in the undesirable direction was associated with worse self-reported health. However, the most striking finding from this study was that absolute personality change was associated with having more biomarkers meeting the cutoff for metabolic syndrome. This study also found that absolute change (either increases or decreases) in agency, which measured empowerment and the sense of control over one's environment, was associated with poorer metabolic health. The biomarkers were only measured at the second assessment, so it is unknown how much health change occurred over the follow-up. It is possible that changing health over 10 years led to the observed changes in personality, so causal inferences from these findings are tempered by this limitation. Nevertheless, it is a provocative idea that personality change in either direction can have negative consequences for health. In adulthood, personality is typically relatively stable (both rank-order and mean-level stability), so when personality change does occur, it may be related to a life event or stressor, which could affect health. Perhaps trait change in adulthood threatens one's coherent sense of self. In adults, traits, motives, and autobiographical narrative are integrated to form a sense of self, so changes in any one of these components may weaken that sense of self, which may have negative health consequences.

Change in Old Age

We still have much to learn about personality in old age, but it does appear to be a time when maturational personality change becomes more likely after a period of relative stability in

adulthood (Specht et al., 2014). Findings vary across studies as to what may be normative developmental trends for this age group. One study showed decreased conscientiousness and increased agreeableness in those ages 61–99 years, termed the “dolce vita” effect (Marsh, Nagengast, & Morin, 2013), whereas others have not obtained similar results (Allemand, Zimprich, & Hendriks, 2008; Soto et al., 2011). These days, old age, if defined as over age 60, may last for several decades, and studies that include the oldest-old may yield different results from those that do not.

Personality change in old age has been related to health outcomes. Mroczek and Spiro (2007) related changes in neuroticism to mortality risk among older men in the Normative Aging Study. At the beginning of the study, their participants ranged in age from 43 to 91 years, and they were followed for 12 years. Changes in neuroticism were modeled as growth trajectories, which provide a measure of the trait’s initial level and change over time. They found that the men with the highest initial levels of neuroticism in combination with the highest increases in neuroticism had the highest mortality risk. Studying octogenarians, Möttus, Johnson, Starr, and Deary (2012) investigated personality change for all the Big Five traits in the ninth decade, measured over two assessments from ages 81 to 87. Unlike Mroczek and Spiro’s study, emotional stability (i.e., neuroticism) remained stable over the two assessments, whereas the remaining Big Five traits declined. Declines in conscientiousness were associated with declines in physical fitness. As people live longer but not necessarily healthier lives, understanding the association between personality change and health change in the oldest-old is becoming increasingly relevant.

Health Change and Personality

It may be intuitively easier to believe that changes in health lead to personality change, than to believe that changes in personality lead to changes in health. Stressful life events appear to have effects on aspects of personality, such as making a person more neurotic (Riese et al., 2014), and the onset of a life-changing disease is surely one kind of major stressful event. Illness leads to multiple changes with potential to alter personality. The experience of having a disease affects a person’s biology, which may affect their

personality. A person diagnosed with a disease may also acquire a new social identity and a new social role: the “sick” role (Goffman, 1990). When a person becomes a “cancer patient,” a “diabetic,” or he or she “has the flu,” the person must change aspects of his or her lifestyle and be treated differently by others because of this new identity. The person may come to see him- or herself differently as a result. It seems highly plausible, therefore, to expect some personality change as a consequence of illness.

Literature and real life abound with examples of illness affecting people’s lives and, by extension, their personalities. I enjoy Jane Austen’s novels, and my favorite is *Persuasion*. One of the more dramatic moments in the book is when Louisa Musgrove impetuously jumps off a wall, surprising her gallant companion, who fails to catch her. She suffers a fairly serious concussion. During her convalescence, she falls in love with a thoughtful, poetry-loving young man with a tendency toward melancholy. Prior to her accident, she was not much of a reader or a deep thinker. How could these two fall in love? We are told they fell in love over poetry. He was a constant presence during her recovery and doubtless taught her to appreciate the poetry he loved. Not much more explanation is offered, but we can fill in the blanks. The injury may have left her frightened, chastened even, as well as weak, confused, and in pain. In this susceptible state, she underwent a change of values and perhaps a reappraisal of her life to date. Doubtless, in the future, she would see her accident as a key turning point in her autobiography.

A more contemporary and real-life illustration of the life-changing impact of illness was provided by Laura Hillenbrand, author of a best-selling book about an initially unpromising race horse called *Seabiscuit*, who eventually became American Horse of the Year in 1938. In a *New Yorker* Personal History article, she gave a vivid account of the sudden onset of chronic fatigue syndrome and its subsequent effects on her life (Hillenbrand, 2003). She had to make enormous compromises to accommodate this debilitating illness. She dropped out of college and rarely left the house. For years, she was unable to travel in a car because of severe vertigo. In the broader sense of personality as the combination of traits, motives/goals, and autobiography, this illness led to dramatic changes and was a major event in her personal narrative.

A challenge for studying the effects of illness on personality is that, ideally, personality

should be measured prior to the onset of illness, as well as afterward. A retrospective report of personality before the illness is likely to be less accurate than measures obtained before the illness occurred. Fortunately, some recent studies have collected these measures. A study of young adults in Finland demonstrated that the onset of a chronic illness by age 20, or between ages 20 and 23, was related to increased neuroticism from ages 20 to 23 (Liekas & Salmela-Aro, 2015). In addition, those who were diagnosed with a chronic disease by age 20 had greater increases in conscientiousness between ages 20 and 23 than those with no such diagnosis. This study suggests that disease onset in emerging adulthood, which is already a time of considerable personality change, may have both negative and positive consequences for personality change. Increases in neuroticism may be the result of health-related anxiety and vigilant disease monitoring, whereas increases in conscientiousness may be the result of improved health behavior leading to changes in self-perception. A study of older participants drawn from three large-scale cohort studies, spanning young adulthood to old age, found that conscientiousness decreased after the onset of chronic illness (Jokela, Hakulinen, Singh-Manoux, & Kivimäki, 2014). In contrast to these studies, using data from the Baltimore Longitudinal Study of Aging, which includes multiple assessments of personality and disease over time, Sutin, Zonderman, Ferrucci, and Terracciano (2013) observed that personality remained largely unchanged in response to disease onset. Based on the limited research so far, it is not clear whether illness onset is linked to changes that deviate from or enhance the pattern of normative trait development for a particular age. In addition, there is still much to discover about the effects of specific illnesses on trait change.

Intentional Personality Change

Personality change is assumed to be triggered by a number of influences, including biological maturation, the influence of social milestones such as going to college, and events such as disease onset (Lodi-Smith & Roberts, 2007). Most people would like to change some aspect of their personality (Hudson & Roberts, 2014). I have an acquaintance who told me she decided as a teenager to change from being an introvert to an extravert because extraverts were happier

and had more fun. I would say she succeeded, so some of us can indeed make intentional personality changes.

A question that is difficult to answer, however, is whether personality change is the result or cause of behavior change (Hudson & Fraley, 2015). Landmark life events necessitate behavior changes that over time may become consolidated in the form of trait change and change in identity (Roberts & Jackson, 2008). Alternatively, life events may impose new roles and social identities that require changes in traits and behaviors (Lodi-Smith & Roberts, 2007). These contrasting mechanisms of trait change have been described, respectively, as bottom-up (i.e., behavior-driven) versus top-down approaches (i.e., trait-driven), (Magidson, Roberts, Collado-Rodriguez, & Lejuez, 2014).

A health event is one motivator of behavior change that may lead to bottom-up trait change. An accident, or the onset of a serious chronic illness, can be a powerful wake-up call to adopt a healthier lifestyle. In my work on illness beliefs among people with type 2 diabetes, it was not uncommon for people to say that the onset of this disease made them take better care of themselves (Hampson, Glasgow, & Toobert, 1990). Leading a healthier lifestyle as a result of their illness might have had a bottom-up effect of increasing their level of conscientiousness. There is evidence for this kind of personality change. Healthy living at baseline, particularly higher levels of physical exercise and more modest alcohol consumption, was associated with positive trait change, including increased conscientiousness, over the subsequent 4 years in a nationally representative sample of Australian adults (Allen, Vella, & Laborde, 2015). Even more marked effects might be observed when healthy living is prompted by a change in health status.

It is also possible to change personality using a top-down approach that aims to change personality traits, and therefore behavior. Psychotherapeutic interventions have been shown to be associated with trait changes on the Big Five, such as extraversion and neuroticism (for reviews, see Chapman, Hampson, & Clarkin, 2014; Magidson et al., 2014; Roberts et al., 2017). Top-down trait change, aided by an intervention to help with implementing intentions to change, has also been demonstrated with undergraduates (Hudson & Fraley, 2015).

Intentional personality change includes changing goals and motivations, as well as

traits. *Agency*, the capacity to consciously shape the direction of one's life, is an essential human quality that is not adequately addressed in trait research (Heckhausen et al., 2010). To maximize success in life, it is necessary not only to choose goals wisely and pursue them vigorously, but also to know when it is time to let go. Heckhausen and colleagues identify two kinds of control that are involved in successful development. *Primary control processes* are directed at changing one's world to bring the environment into line with one's wishes. For example, an older woman may choose to move to a senior-living community when she finds she no longer wishes to have the responsibilities of independent living. *Secondary control processes* (motivation) support primary control by helping one to stay committed to a goal in the face of challenges, for example, by seeking social support from others. It is important to take a lifespan perspective when studying human agency because goals change with age. Among older adults, it is necessary to disengage from goals that were more relevant in youth. For those with chronic illness, goals must be modified to adapt to limitations (Saajanaho et al., 2016). Primary control strategies are associated with better health outcomes, less depression, and less functional disability (Heckhausen et al., 2010), and conflict between primary and secondary processes leads to poorer health outcomes (Hamm, Chipperfield, Perry, Heckhausen, & Mackenzie, 2014). These findings suggest that the agentic aspects of personality are important for health. Supporting the development of adaptive primary control strategies and the motivation to stay committed to one's health-related goals are ways in which we can stay on more healthful trajectories.

Summary and Conclusions

At the beginning of this chapter, I suggested that a greater understanding of the relation between personality development and health would provide insights into how we might be able to alter our health trajectory. As we have seen, although personality development continues across the lifespan, some personality traits, particularly conscientiousness, measured at one point in life predict later health. This holds true for personality measured during life stages characterized by more change (i.e., childhood, youth, and old age), as well as the relatively

stable period of life during adulthood. Personality change also predicts health change, and health change predicts personality change. The implication of these findings is that at any time in life, it may be valuable to attempt personality change in the health-enhancing direction. However, childhood seems to be an especially promising time to encourage the development of greater conscientiousness through actions such as school-based interventions and parental modeling.

Nevertheless, it is important not to paint an overly straightforward picture of the association between personality development and health, and what it implies. As we have seen, while many studies suggest that personality assessed at one point in life predicts later health, these observations are only suggestive of a causal relation, and much remains to be learned about the mechanisms that underlie this association, especially when considered developmentally. As personality and health develop and change over time, the processes relating the two are also changing. While we have begun to study these changes, more longitudinal data with multiple measures are needed, as well as sophisticated analytic techniques to reach a better understanding of these complex associations. Until we have a more complete grasp on mechanisms of personality and health over the lifespan, we should proceed cautiously with interventions intended to improve health by changing personality.

The focus on personality development and change across the lifespan now prevalent in trait research contradicts our personal experience of a fairly consistent sense of self over time. Our personal narratives, or autobiographical selves, may be punctuated by major turning points that reflect marked changes in our lives, but we are probably not so aware of more modest changes in ourselves over time. We may under- or overestimate the degree of actual change. Consider a classic study in which participants were asked to recall how well adjusted they were 25 years earlier, when they were 19 years olds (Woodruff & Birren, 1972). The investigators were fortunate enough to have the self-ratings of adjustment from their participants when they were 19 to compare with the 25-year retrospective ratings. They found a discrepancy: Participants remembered themselves as being less well adjusted at 19 than they had described themselves at the time. They recalled more self-change than was apparently the case, perhaps to be consistent

with their personal narratives of becoming mature adults. Despite the evidence that childhood personality appears to direct people onto pathways to later health outcomes, it seems unlikely that people would accurately recall their level of conscientiousness as children or attribute their health at midlife to this childhood trait (although this would be an interesting question to research). While the stories that we live by may not be completely accurate, they provide meaning and coherence (McAdams, 1993). Findings from studies of personality development and health, such as those reviewed here, may provide insights that people can incorporate into their autobiographies and perhaps use to make desired changes in their lives.

As this chapter has illustrated, the majority of research on personality development and health has been focused on traits, ignoring the agentic and autobiographical aspects of the self. Trait research has revealed some remarkable findings about the relation between personality and health outcomes across the lifespan. Nevertheless, a more complete understanding of how personality change is related to health may be achieved if personality researchers go beyond traits. By incorporating the subjective experience of growing and changing over the lifespan, we may achieve a more complete picture of the relation between personality and health.

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