Personality Adjustment and Growth as Antecedents and Correlates of Wisdom

by

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A Thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Psychology

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Psychology and Methods
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Acknowledgements

For too long now, I have been composing these acknowledgements in the infrequent periods when my mind has been idle. It seems a little odd, as it has sometimes seemed unlikely, that these words now approach physical form when so many other versions faded before they could be apprehended. The PhD journey has, for me, been riddled with unexpected challenges, perhaps just as it should be in principle, and as it nears the end, it is interesting to take stock of what resources and inspirations have been depleted, and what new ones found, along the way.

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ABSTRACT

Personality development has been implicated in theory as one important antecedent to the development of wisdom, but there is very little longitudinal evidence directly relevant to the proposition. This dissertation sets out to investigate the longitudinal relationship between wisdom and two trajectories of positive personality development, personality adjustment and personality growth. The first of the three empirical papers establishes partial measurement invariance for unique new Personality Adjustment and Personality Growth scales across adulthood in a longitudinal sample from approximately 34 to 73 years of age. The second paper uses a latent growth curve modeling approach in the same sample to establish trajectories for Personality Adjustment and Growth, and then latent class growth analysis to test for the presence of groups whose personality development paths towards later life wisdom are relatively similar. In the final paper, the same conceptual framework was applied to two adolescent samples to establish pre-adult validity. The key findings were as follows: a) that the distinction between personality adjustment and growth is viable and useful throughout adulthood and in adolescence, with a consistent cross-sectional association between personality growth and wisdom; b) that there are adolescence-specific features of personality growth and adjustment; and c) that there is a longitudinal relationship between early adulthood personality growth and later life wisdom, and a class of people who had high levels of Personality Growth throughout adulthood and increasing levels of Personality Adjustment also had relatively high levels of wisdom at later life. Together, these findings indicate that personality development indeed plays a substantial role in the development of wisdom: As expected, personality growth even in early adulthood is an important antecedent of wisdom development, and personality adjustment has an important role as a scaffold to sustain personality growth.
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I. GENERAL INTRODUCTION

The topic of wisdom has generated substantial interest in psychological literature, particularly in terms of what it is (Baltes & Staudinger, 2000; Jeste et al., 2010) and how it should be measured (Glück et al., 2013). While disagreement about the nature and measurement of wisdom (see Staudinger & Glück, 2011) has not been entirely resolved, interest has spread to questions of how wisdom develops (e.g., Weststrate & Glück, 2017) and whether it can be increased (e.g., Stange, 2008; Staudinger & Baltes, 1996; Sternberg, Jarvin, & Grigorenko, 2009). While developmental models and cross-sectional evidence for correlates of wisdom have increased in abundance, there is to date only very little longitudinal evidence to support the developmental propositions made. There is now a push towards developing methods to teach for or through wisdom (Sternberg, 2017), and while it is important that this movement maintains a close relationship with the evidence (Grossmann, 2017), this means it is also vital that longitudinal evidence is sought.

There are some broad similarities in claims about how wisdom develops, and at the core is agreement that wisdom is something that develops over time (e.g., Ardelt, 2000; Baltes & Smith, 2008; Erikson, 1982; Weststrate & Glück, 2017); but whether this is considered a default, normative and adaptive process or not betrays much about investigators’ assumptions about what wisdom is. Taking a lifespan psychology approach, which places emphasis on development as a set of continuous processes shaped by transactions between individual biology and contextual influences, researchers have proposed an ontogenetic model for the development of wisdom that specifies several personal characteristics, such as experience and personality, that might contribute to later life wisdom (Staudinger & Baltes, 1994; Baltes & Staudinger, 2000). A number of the relationships presented in this model have been confirmed cross-sectionally, but so far none have been investigated longitudinally. One key cross-sectional finding has been that age has no significant association with a
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performance measure of wisdom, reinforcing the notion that wisdom may develop idiosyncratically across the lifespan rather than normatively (Pasupathi, Staudinger, & Baltes, 2001; Staudinger, 1999; Staudinger, Lopez, & Baltes, 1997). However, age has been positively associated with the same performance measure of wisdom among adolescents and emerging adults, suggesting that until young adulthood, some increase in wisdom with age is typical, before other factors, such as creativity, moral reasoning, and social intelligence begin to play a stronger role (Staudinger & Pasupathi, 2003). Therefore, it should be worthwhile investigating what is associated with the development of wisdom during adolescence (e.g., Pasupathi & Staudinger, 2001), and, although individual adults’ paths towards wisdom during adulthood may appear to be idiosyncratic, it may be possible to disentangle common personal characteristics among those who reach higher levels of performance.

Recent progress in one aspect of the ontological model referred to above, that of personality development, offers particularly promising leads. There is now substantial empirical evidence that personality changes in typical and predictable ways as we age (e.g., Caspi, Roberts, & Shiner, 2005; Roberts & Mroczek, 2008; Roberts, Walton, & Viechtbauer, 2006). Given the cross-sectional associations between personality and wisdom (Staudinger & Pasupathi, 2003), an explanation of the relation between the dynamic aspect of personality and later life wisdom seems highly important.

The terms personality development and maturation as used in this thesis need to be clarified, as their intended meanings are drawn from a wide range of possible interpretations. For example, physical maturation, sometimes termed biological growth, refers to the normative biological changes that are associated particularly with childhood and adolescence, including brain growth that may not end until the mid-20s or even 30s (see Sawyer et al., 2018). Unless specifically referenced, I have not intended maturation to be understood in biological terms. While biological changes are understood to underlie much of the
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psychological development discussed herein (for example as captured in the term *developmental maturation*, which describes typical age-related physical and psychological changes), the focus of the thesis is on the psychological, and no attempt is made therefore to repeatedly refer back to possible biological underpinnings. *Psychological maturation* itself can be understood in a number of different ways, including the complete development of Freudian intrapsychic structures in a healthy adult mind, free from troubling anxiety and with which one can demonstrate the capacity to work and love; or the development of competence to fulfil social roles, or the ability to act as an adult (see Helson & Wink, 1987; Hogan & Roberts, 2004). In general, unless otherwise specified, *maturation* refers to psychological maturation, and is where possible accompanied by more detailed terms. Given that the specific area of focus of the thesis is just one aspect of psychological maturation, *personality development*, that term is usually preferred over maturation. Although disagreements exist about what psychological maturation is, and therefore what might cause or be caused by changes in personality as we age, this thesis is firmly rooted in the framework outlined in Staudinger and Kunzmann (2005), in which two trajectories of positive personality development, *adjustment* and *growth*, are outlined. Although reference is sometimes made to *maturation towards adjustment* or *towards growth*, and these terms should be understood to reference changes within the domain of personality development towards growth and adjustment, these longer terms are only used to emphasize the dynamic aspect of the trajectories. The terms *personality growth* and *personality adjustment* are preferred, and these should be understood to include the dynamic aspect of personality development. Specific details of the two trajectories and the changes implied in personality development in terms of adjustment and growth are given in Chapters 2 and 3.
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Personality Development and the Development of Wisdom

Recent findings regarding the Big Five personality traits (McCrae & John, 1992) tend to show clearly that there are normative changes over time, namely that openness to experience increases from adolescence to adulthood, while conscientiousness, emotional stability, and agreeableness increase steadily into later adulthood, with the dominance facet of extraversion increasing and the vitality component staying stable (Roberts et al., 2006). Although other work has found more stability, for example in levels of agreeableness during adulthood, and different kinds of changes, such as decreases in openness to experience and in some facets of conscientiousness in later life (Jackson et al., 2009; Milojev & Sibley, 2014), it is clear that the early and late phases of adulthood are characterized by important changes in personality. Such normative changes in personality during adulthood are sometimes understood as the maturity principle (Caspi et al., 2005) in the sense that increases in conscientiousness, agreeableness, and emotional stability appear to represent improvements in personality maturity, i.e., progress towards ideals of social competence and role fulfilment. However, if we consider personality development towards wisdom, given that there is a lack of a direct relationship between age and wisdom (Brugman, 2006; Staudinger, 1999; Staudinger et al., 1997), any theoretical model that treats personality development as a precursor of wisdom must look beyond normative changes. Some researchers have placed more emphasis on those normative changes, for example by suggesting that the development of emotional maturity, which, in personality terms, tends to refer to increases in the ‘mature’ personality characteristics, conscientiousness, agreeableness, and emotional stability, is an important component of wisdom (e.g., Ardelt, 2003; Orwoll & Perlmuter, 1990). However, another important characteristic, most consistently and strongly related to wisdom in empirical work, openness to experience, despite increases early in adulthood, does not continue to increase alongside agreeableness, conscientiousness and emotional stability.
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according to the maturity principle, and its decline in later life may well be central to explaining why later life is not a time of wisdom for all. Although there is consistent cross-sectional evidence for the relationship between openness to experience and wisdom however it is measured (Glück et al., 2013; Staudinger et al., 1997; Staudinger & Pasupathi, 2003), this has not been explored longitudinally: for example, it is not clear if or how levels of openness to experience, typically increasing in the early adult years, contribute to the development of wisdom later, when openness declines. It has been shown that some people with a “developmental closeness to wisdom” (Glück & Baltes, 2006, p.668), unrelated to age, are wisdom-prepared\(^1\), i.e., possessed of a better resource profile to call on when the opportunity or necessity to demonstrate wisdom arises (Glück & Baltes, 2006). It is not clear without longitudinal research, however, whether there is any pattern to the development of such a resource profile, although there are clues to suggest that the personality aspect of this preparedness may start to be important in adolescence.

**Personality in adolescence and the seeds of wisdom.** Although there is cross-sectional evidence that wisdom, like many other characteristics, also shows gains during adolescence, and while levels remain lower than among adults, this has given rise to the suggestion that the seeds of wisdom can be found in adolescence (Pasupathi et al., 2001). To date, there is very little longitudinal wisdom research, and what there is does not attempt to measure wisdom from adolescence into adulthood: the metaphorical seeds, therefore, are assumed to lie in adolescence, but their form is also unclear. One important reason for the lack of longitudinal work is that wisdom may not be developmentally relevant until later in life, and therefore not be present in sufficient levels earlier in the lifespan to draw conclusions about its nature. Low levels during adolescence should be the norm, not because it is

\(^1\) This term appears to be first used by Glück and Baltes (2006).
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impossible for a young person to be wise, but because wisdom has no clear role among the resources that are relevant to a successful adolescence. Among adolescents, higher levels of wisdom-related performance were associated with a slightly different set of characteristics than among adults: the more basic aspects of personality and intelligence played a stronger role, so not only is wisdom is perhaps not developmentally relevant, but also the characteristics required for higher adult levels of wisdom-related performance have not yet had time to develop (Staudinger & Pasupathi, 2003).

As such, the repeated measurement of wisdom, whichever approach to measurement is used, may not readily show a continuous, easily interpreted trajectory, and it may be more informative, when seeking antecedents of wisdom, to turn attention towards other characteristics that share the tendency to demonstrate gains in adolescence: there is no reason to assume that the metaphorical seed of wisdom should look like a smaller version of the plant that grows from it. A wide range of changes in adolescence have received attention in psychological research, and one recurrent theme around which those changes are conceptually organized is that of accumulating personal resources to master developmental tasks. For success in the realms of friendship, academic work and conduct that are salient in adolescence, and in preparation for the emerging domains of work and romantic relationships (e.g., Roisman, Masten, Coatsworth, & Tellegen, 2004), gains are made in a number of personal characteristics: empathy (Grühn, Rebuchal, Diehl, Lumley, & Labouvie-Vief, 2008), moral reasoning (Eisenberg, Cumberland, Guthrie, Murphy, & Shepard, 2005), conscientiousness (e.g., Tackman, Srivastava, Pfeifer, & Dapretto, 2017) and perspective taking (Choudhury, Blakemore, & Charman, 2006), for example, have all been shown to increase during adolescence. One task, the development of identity, continues to receive detailed attention; and an increasingly clear pattern of associations with personality traits has been established in this layer of development (e.g., Luyckx, Soenens, & Goossens, 2006;
I. GENERAL INTRODUCTION

Luyckx, Teppers, Klimstra, & Rassart, 2014). In particular, there is an important relationship between openness to experience and identity development: the normative increases in openness to experience during adolescence (Allik, Laidra, Realo, & Pullmann, 2004; McCrae et al., 2002; Pullmann, Raudsepp, & Allik, 2006) may be highly functional in facilitating an exploration of roles during adolescence; this may in turn increase openness (Luyckx et al., 2006). This is an example of how the various developmental tasks of different phases of life require, consolidate, and promote different personality resources.

Selecting the characteristics that may have an antecedent role in the development of wisdom is made more difficult because direct comparison of personality traits in adolescent versus adult samples can be hindered by a lack of continuity in constructs between adolescent and adult samples (see Soto & Tackett, 2015). Although there is certainly research on personality development in adolescent samples, when it comes to the relationship between personality development and wisdom, there is a more substantial theoretical and empirical base using adult samples. For example, the personality characteristics that promote and result from engagement with age- or stage-relevant tasks have some consistency throughout adulthood and this may be captured by the maturity principle of personality development above (Caspi et al., 2005), but during adolescence, a temporary absence of the maturity principle has been identified (Van den Akker, Dekovic, Asscher, & Prinzie, 2014), which raises the question of whether it is appropriate to employ that principle at all in understanding normative adolescent personality development, let alone to treat maturation from adolescence into adulthood as a single normative track. A single definition of personality maturation may not be appropriate to describe changes across different stages of life, just as a single definition of maturity may not be adequate to describe the various positive ways in which personality can mature. It is therefore important to consider, for the longitudinal approach employed in this thesis, whether wisdom-related performance has continuity across the entire
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lifespan. A discussion of this issue has employed a distinction between explanatory and descriptive continuity to argue that the observed differences in WRP correlates among adolescent and adult samples indicate explanatory discontinuity, while the construct measured is the same, i.e., has descriptive continuity (Staudinger & Pasupathi, 2003). In other words, measures of WRP at different points in the lifespan represent the same thing, even if there are different patterns of associations with variables that may contribute to levels of WRP at each stage. However, if we step aside from the idea that adolescent wisdom is an antecedent of later life wisdom, and instead focus on investigating the lifelong influence of other antecedents, those antecedents ought to also demonstrate some continuity. Personality development is a good candidate antecedent because regardless of measurement paradigm and age-group, at least one personality characteristic, openness to experience, has a cross-sectional relationship with wisdom (e.g., Glück et al., 2013) and may be central to the development of a wisdom-prepared personality profile (Glück & Baltes, 2006). Openness also being a considered characteristic of personality growth (Staudinger & Kunzmann, 2005), the persistent cross-sectional relationships of openness with wisdom provide an anchor for hypotheses based around personality development across the lifespan as an antecedent of wisdom.

One of the persistent challenges of this thesis has been in trying to maintain a sense of continuity in the measures used, i.e., attempting to achieve comparability across the lifespan at least from adolescence to late adulthood, while allowing for the obvious possibility that underlying influences on comparable constructs are not the same at each stage in life. Specifically, in the course of this thesis, I have attempted to show that the distinction between personality adjustment and growth is applicable at each timepoint, or, has descriptive continuity, in spite of differences in the scale items that are most indicative at each stage in life. This means that emphasis is placed first on building a better understanding of the make-
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up of personality adjustment and growth in adulthood, where there is a more substantial body of relevant research, before tentative steps are taken to apply this understanding to adolescent samples.

**Personality development in adulthood and the potential for wisdom.** With the recognition that personality can change over a lifespan, researchers have begun to pay closer attention to normative, typical changes, with longitudinal studies playing a particularly important role in deepening our understanding of human development. This has led to the identification of important personality-related antecedents of various outcomes in adulthood, including wellbeing (Diener, Oishi, & Lucas, 2003), religiousness and spiritual seeking (Wink, Ciciolla, Dillon, & Tracy, 2007), longevity (Friedman, Kern, & Reynolds, 2010), competence and ego-level (Helson & Wink, 1987), and psychological health (Jones & Meredith, 2000). Many antecedents have been located in the earlier phases of the lifespan, such as childhood, adolescence, and emerging adulthood, highlighting these earlier phases of the lifespan as particularly important for personality development.

Reasons why development in one phase might have important consequences later have long been the concern of developmental psychologists. Broadly speaking, the propositions of early developmental theorists (e.g., Erikson, 1982) who placed individual development in a social context have found empirical support: successfully completing developmental tasks has positive outcomes that reach across the lifespan, and disruption to this typical pathway of positive psychological health has numerous social and personal consequences. However, a number of positive personality characteristics do not fit neatly into a framework that focuses only on typical development, such as openness to experience, which, as described above, does not follow a path of steady increase after mid-adulthood, even decreasing before late adulthood (Donnellan & Lucas, 2008). In addition, different people mature towards different goals: although some are shared, there are differences in
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individuals’ needs and the paths taken to meet them (Ryan & Deci, 2000). It has been noted that the maturity principle cannot account for some aspects of maturity, specifically that which the humanistic tradition of psychologists favored (Donnellan, Conger, & Burzette, 2007): development in terms of self-actualization and openness. That openness should increase and decrease within a lifetime makes it difficult to conceive of as a sign of psychological maturity (in the sense that maturity too often implies steady, incremental increases), and this has sidelined such aspects of development, lending perhaps too much prominence to an understanding of just one kind of maturity, that which has clear relevance to the mastery of developmental tasks, that which steadily increases in psychologically healthy people, as ideal rather than just typical.

This is problematic when the outcomes of human development that we consider are not typical, such as wisdom (Glück & Bluck, 2013; Jeste et al., 2010; Weststrate & Glück, 2017). The potential for wisdom appears to be more available among those who are developmentally closer to wisdom, who are open to experience and growth (Glück & Baltes, 2006): that there is any such pattern indicates that we can do more than label the development of wisdom as idiosyncratic, and instead seek a framework that accounts for this less common type of development in addition to typical development.

Positive Personality Development in Adulthood: Two Distinct Trajectories

The term positive personality development was present in literature without clear definition, indicating personality development that is, in the relevant conceptual model, to be perceived as good, rather than bad, because it occurs in support of positive outcomes like self-transcendence (e.g., Levenson, Jennings, Aldwin, & Shiraishi, 2005), or generativity and integrity (e.g., Stewart, Ostrove, & Helson, 2001). An elaboration of the meaning of positive personality development along two different trajectories gives more substance to the term
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(Staudinger & Kunzmann, 2005): There has been a tendency to conceptualize personality maturation in one way, as outlined above, based around the typical increases in conscientiousness, agreeableness, emotional stability and the social dominance facet of extraversion that form the core of the maturity principle (Caspi et al., 2005). Privileging this form of positive development, which supports the achievement of age-relevant developmental tasks and the experience of subjective wellbeing, has contributed to an overemphasis on normative development, labelled adjustment (Staudinger & Kunzmann, 2005). This has occurred at the expense of the study of atypical development that is also positive and that has been referred to as growth (Staudinger & Kunzmann, 2005). Highly valued but more elusive positive constructs include wisdom, ego development (Loevinger & Blasi, 1976), affect complexity (Labouvie-Vief & Medler, 2002), and the Personal Growth and Purpose in Life dimensions of Ryff’s Psychological Wellbeing (PWB) Scale (Ryff, 1989). To date, a body of work has linked personality adjustment with conscientiousness, agreeableness and emotional stability, subjective wellbeing, and with the PWB scales of Environmental Mastery, Positive Relations with Others and Self-acceptance, while personality growth has been linked with openness to experience, the PWB dimensions of Personal Growth, Purpose in Life and Autonomy, and a performance measure of wisdom (Staudinger & Kunzmann, 2005; Wink & Staudinger, 2016).

A positive personality development framework grounded in changes associated with both typical maturation and atypical maturation towards highly valued outcomes is therefore highly suitable for longitudinal investigation into the role of personality development in wisdom. However, the empirical work to date linking growth and wisdom has taken place cross-sectionally, and exclusively with adult samples. One recent longitudinal study has drawn explicit links between personality growth and wisdom (Ardelt, Gerlach, & Vaillant,
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2018), but without using a direct measure of wisdom in later life and inferring personality growth and adjustment from proxy measures of Big 5 personality traits.

Although maturation towards adjustment and maturation towards growth are conceived of as trajectories, there is no evidence of mean-level stability or change, no evidence that the constructs can be validly applied at all points during the lifespan, and, crucially, no specific measures (i.e., purpose-built, and validated) available with which to gather such evidence. The same concern is not held for wisdom: each of the empirical chapters uses the same well-validated Berlin Paradigm to measure wisdom.

Aims of the Dissertation

This dissertation has four aims. The primary aim is to identify antecedents of later life wisdom within the domain of personality development through empirical tests of some of the more prominent theoretical propositions, including the first longitudinal investigation of personality development as an antecedent of general wisdom. In order to achieve that, three subsidiary aims must be addressed. Firstly, to elaborate the current state of literature on personality adjustment and personality growth, by clarifying their relationship with each other and with conceptually related constructs, and distinguishing them from those other constructs. This is carried out with a mind to establishing the foundations for the conceptual and methodological frameworks used and expectations expressed in the empirical chapters that follow, such as the expectation that personality growth should be longitudinally related to wisdom. Secondly, to develop viable scales to measure personality adjustment and growth in a longitudinal dataset based on Q-sort ratings. With scales for personality growth and adjustment validated for use across adulthood in a longitudinal dataset, it is then possible to investigate the relevance of personality growth and adjustment as antecedents of later life
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wisdom. The third subsidiary aim is to test the viability of the distinction in adolescent samples.

Therefore, following this general introduction, Chapter 2 is a detailed review of literature associated with personality adjustment, and Chapter 3 with personality growth. Chapter 3 also offers an overview of wisdom research, introducing relevant distinctions to clarify what approach was used to the measurement of wisdom. Wisdom-related performance is a dependent variable and/or indicator of personality growth in all three empirical papers, presented in Chapters 4, 6 and 8, and so Chapter 3 includes a section focused mainly on distinguishing the Berlin Approach as a performance measure of wisdom.

Chapter 4 presents an empirical paper (Study 1), in which scales were created to measure personality adjustment and growth in a U.S. longitudinal sample, and then validated in the final, later life wave of that sample. The further implications of the findings of Study 1 are considered in Chapter 5, a transitional chapter explaining how Chapter 6 uses the Study 1 findings as a departure point to address further gaps. Chapter 6 is an empirical paper (Study 2) that investigates longitudinal trajectories of personality adjustment and growth using latent growth curve analysis and identifies latent classes that are based on these trajectories and a distal measure of later life wisdom. Chapter 7 is a transitional chapter that shows how Chapter 8 departs from the findings of both Study 1 and Study 2. Finally, Chapter 8 is an empirical paper containing two studies (Studies 3 and 4) that investigate whether there is validity in applying a personality growth and adjustment framework in adolescence in two different samples, one U.S. and one German.

Chapter 9 is an overall discussion of the findings presented in the dissertation in which I present conclusions of the project as a whole.
II. PERSONALITY ADJUSTMENT: MASTERING THE GIVEN

The term *adjustment* has been used frequently in psychological literature to represent a state of positive mental health, for example in research on ideal psychological health (Siegelman, Block, Block, & von der Lippe, 1970), transitions (e.g., Searle & Ward, 1990), resilience (e.g., Bonanno & Diminich, 2013) and coping (see Luyckx et al., 2008). In most of these cases, adjustment represents positive change over time, with the implication that successful adjustment occurs against idiosyncratic threats to mental health. In this view, adjustment represents movement towards positive mental health in the face of challenging life events, inasmuch as those who are well adjusted do not have symptoms of psychological disorders, with the implication that over the span over a person’s life, that person will usually become more or better adjusted. Amid the range of possible meanings of adjustment, this dissertation focuses on personality adjustment, which, as explained below, involves the development of personal characteristics not only that can be protective against idiosyncratic threats to mental health, but just as importantly, personal characteristics that develop in support of, and response to, the typical challenges that living in a society entails.

**Personality Adjustment Incorporates Social and Intrapersonal Maturity**

Research into personality maturation appears therefore to assume that, like older conceptions of biological maturation, we make cumulative gains from childhood to adulthood, towards an adult state that is subsequently subject to decay, with notable exceptions considering further development in later life (Erikson & Erikson, 1998). Those gains are usually tacitly linked with progress against social goals. For example, the same kind of maturation has frequently been referred to as increase in *competence* (e.g., Clausen & Jones, 1998; Masten et al., 1995), a term intimately tied to mastery and achievement, and therefore implicitly associated with activities, tasks, and accomplishments, not merely the
undisrupted passage of time. For example, Erikson’s (e.g., Erikson & Erikson, 1998) tasks are a series of social and intrapsychic challenges, age-relevant stages of conflicts such as between identity achievement and identity diffusion. Each pole of the conflict represents a positive or negative outcome, with the positive outcome always facilitating success in subsequent stages, echoing the notion that adjustment begets further adjustment. While continuous improvement in terms of personality maturation is available along a chronological timeline, complete maturity or growth is a feature of the final stage, which pits integrity against despair. It is in this final stage that the notion of wisdom is introduced and discussed. Although Erikson’s discussion considers wisdom rare and difficult to achieve, with the undisrupted passage of time more likely to lead to feelings of despair than integrity, the positive pole is still a reflection of maturity, of success in the tasks of aging that bring a person into the final stage. This approach in itself is a departure from previous psychodynamic explanations of maturity in that it gives more centrality during development to the shared social environment that presents relatively common challenges as we age as opposed to the development of intrapsychic structures and adaptive styles (see Bonanno, 2004). This is not to say that there is no intrapsychic development in personality adjustment. In separating Allport’s five criteria of the mature personality (1961) according to their relevance to social versus intrapsychic maturity, it has been suggested that only individuality of personal integration is distinctly related to intrapsychic maturity, while only emotional security and regulation of behavior by rules for reducing friction and obtaining rewards in social life is distinctly related to social maturity. The other three criteria, capacity for self-extension, reality orientation and perceptiveness in the appraisal of self and others, and the capacity for compassionate and intimate relationships with others are features of both forms of maturity (Helson & Wink, 1987). Thus, some intrapersonal development occurs in support of social competence – for example development of theory of mind and empathy that are
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highly functional for social relationships (Bretherton & Beeghly, 1982). From the discussion of social versus intrapsychic maturity (Helson & Wink, 1987), it is already clear that identifying a distinct form of maturation that is characterized by personality development in support of such adjustment-related goals like Allport’s (1961) *reducing friction and obtaining rewards of social life*, is an important step in delineating forms of positive personality development.

**Personality Adjustment and Developmental Tasks**

Paying due heed to this inference that there are rewards of social life available to those who mature in a particular way (i.e., in response to what society wants from us), a more comprehensive understanding of personality adjustment is possible if we view it as a normative trajectory of positive development. By considering the trajectory as normative, i.e., typical, it can be seen to incorporate society itself as a source of typical challenges that must be addressed, those challenges coming in the form of socially timed developmental tasks to be completed across the lifespan (Havighurst, 1972; Hutteman, Hennecke, Orth, Reitz, & Specht, 2014). Developmental tasks relevant to each phase of life are different across domains such as romantic relationships and family, work, and social engagement. For example, in early adulthood, tasks include learning to live with a partner, and starting an occupation, while in later adulthood, tasks include dealing with the death of a spouse, dealing with reduced income following retirement, and dealing with declines in physical strength and health, though the strength of social expectations to make these adaptations may change somewhat over time (Hutteman et al., 2014). Personality adjustment is thus a construct reflecting the degree to which a person is successful in making progress towards the completion of those tasks. As such, levels of personality adjustment represent both the personal resources accumulated to achieve success (e.g., personality characteristics), as well
as the benefits of achievement in each domain (e.g., life satisfaction, subjective health). This broad view of personality adjustment is supported by the idea that the tendency to master developmental tasks is cumulative: those who complete tasks are more likely to continue to complete tasks (Seiffge-Krenke & Gelhaar, 2008), so that adjustment begets further adjustment and should be considered dynamic, with a tendency to increase, rather than static. Indeed, highly adjusted adolescents and young adults show future stability of personality (Clausen & Jones, 1998; Lönnqvist, Mäkinen, Paunonen, Henriksson, & Verkasalo, 2008), and subjective wellbeing has been associated with later increases in personality maturity (Specht, Egloff, & Schmukle, 2013). Therefore, increases in personality adjustment over time are considered both healthy and normal.

Normative personality development across the lifespan thus represents the accumulation of resources within the person that are important to function well in society. In the next section I outline the resources relevant to the distinction between personality adjustment and growth.

**Personality Traits Associated with Adjustment.**

Three personality traits: conscientiousness, emotional stability, and agreeableness, have been frequently found in adult samples to group together in factor analysis since Digman’s (1997) description of them as a higher order *alpha* personality factor. Digman described this alpha factor as either a collection of socially desirable traits, or as the socialization process itself, “what personality development is all about” (1997, p. 1250). With reference to the Freudian view of personality development, he considers high levels of conscientiousness, emotional stability and agreeableness as evidence of successful socialization that has proceeded according to “society’s blueprint” (1997, p. 1250). Although this is contrasted with a *beta* factor that is similar to our notion of personality growth,
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implicitly connected therefore to a dynamic aspect, the structural approach to personality using cross-sectional data misses several nuances of personality development, for example, the findings that the component facets of extraversion and conscientiousness behave quite differently over time (Jackson et al., 2009; Roberts et al., 2006) and the traits themselves cluster differently among adolescents (Slobodskaya, 2011). When viewing personality traits as not static but able to change, a different pattern of relationships emerges between traits in longitudinal studies. The factors have also been viewed as representing stability (alpha), representing the maintenance of order, and plasticity (beta), representing novelty and variability, and it has been suggested that the drive towards stability or socialization is associated with serotonergic systems in the brain, while plasticity or growth is associated with dopaminergic systems (DeYoung, Peterson, & Higgins, 2002; Klimstra, Bleidorn, Asendorpf, van Aken, & Denissen, 2013; Reitz & Staudinger, 2017). However similar personality adjustment may be to the alpha or stability factor, the biological explanation for structural differences in personality (i.e. shared genetic heritage) does not fully account for the important differences between people in terms of personality adjustment: understanding shared social influences and cross-cultural similarities in role expectations is extremely important (Roberts, Wood, & Smith, 2005).

Personality development has been accounted for in terms of transactions between the individual and the environment: individuals select and shape environments, and in turn, environments affect dispositions (Srivastava, John, Gosling, & Potter, 2003). To the extent that social and cultural elements of the environment, are shared by persons, typical patterns of successful personality development should be discernible. Although not usually concerned with questions of why, several longitudinal works have now identified typical patterns of development in personality using the Big Five framework (Costa & McCrae, 1994; McCrae & John, 1992). A meta-analysis of these showed that conscientiousness and emotional
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stability increased across adulthood along with the social dominance facet of extraversion, and agreeableness increased in old age, while openness to experience increased into early adulthood but declined in old age (Roberts et al., 2006). This pattern has been broadly supported by other work (e.g., Specht et al., 2011), and has been organized for descriptive purposes as the so-called maturity principle (see above). The maturity principle carries a central assumption that age-related personality changes are adaptive and serve to maintain a sense of identity (Roberts et al., 2006). This implies a view of maturation as functional and reactive, i.e., that personality changes in response to demand from roles an individual takes on (e.g., Donnellan et al., 2007). This is in line with one of the tenets of lifespan psychology: the development of personality in response to socially or personally selected goals can be understood as the acquisition or orchestration of means to optimize resources in the journey to meet goals, and thus personality does not only develop in response to changes, but also to enable those changes (Baltes, Staudinger, & Lindenberger, 1999; Staudinger & Pasupathi, 2000). If we understand good functioning in society as a persistent goal that must be revisited as the specific tasks are encountered, then it follows that increases certain personality traits will be particularly important at different times in adulthood, not only as reactions, but also as motivation to engage with those tasks.

To the extent that personality adjustment reflects an accumulation of means to facilitate good functioning in society, conscientiousness seems particularly important. The importance of conscientiousness longitudinally has been established many times over: for example, it is a predictor of longevity (Friedman et al., 2010) and commitment to family and work duties (George, Helson, & John, 2011). Increases over the lifespan, particularly in early adulthood, have been linked to entering the work force and forming committed partnerships, tasks which can be made easier if a person develops more organization and responsibility, and that may also be sought out because conscientiousness has increased (Srivastava et al.,
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2003). At the facet level, industriousness, impulse control, and reliability increase into middle age, and while impulse control and reliability continue to increase into old age, conventionality replaces industriousness, reflecting a higher social value placed on industry and unconventionality in young adulthood (Jackson et al., 2009).

Anxiety and neurosis in the Freudian sense (e.g., Freud, 1989), represent obstructions to mature functioning. The reverse pole of the Big Five trait of neuroticism, emotional stability, represents the absence of neurotic symptoms, and has been shown to be a predictor of subjective wellbeing in old age (Friedman et al., 2010). This may reflect skill in emotion regulation in terms of affect optimization (Labouvie-Vief & Medler, 2002; Labouvie-Vief & DeVoe, 1991) or a preference for self-contentedness rather than concern as in the *la dolce vita* effect (Marsh, Nagengast, & Morin, 2013). Less emotional volatility is both adaptive and expected of adults, especially as the challenges of older age are encountered, including declines in social and physical function (Staudinger & Kunzmann, 2005). The adjustment to such losses is in itself a normative developmental task (Hutteman et al., 2014) and developing emotional stability can therefore have high value. In this sense emotional stability is intimately tied with concurrent subjective wellbeing in later life, and may be central to the reduction of negative experiences in older age (Srivastava et al., 2003).

Agreeableness is the third personality factor that is associated with personality adjustment. It has been suggested that agreeableness is a trait that increases to facilitate parenting in early to middle adulthood, when increases are typically observed, although this may accompany broader prosocial interests (Srivastava et al., 2003). It may also represent a resource for building, maintaining, and enjoying interpersonal relationships across developmental task domains, especially because the challenge of establishing these relationships repeats several times over the lifespan (Hutteman et al., 2014).
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Beyond Personality Traits: Personality Adjustment and a Dynamic View of Psychological Wellbeing

Personality traits, especially when understood as dynamic features of an individual that affect and are affected by transactions with life events, are certainly a core aspect of personality adjustment. As much as increases in the components of the stability/alpha factor may represent a part of maturation, as the maturity principle suggests, this privileges typical functioning at the expense of other dimensions of positive development towards positive mental health. Development towards positive mental health has been captured in six dimensions by Ryff’s (1989) Psychological Wellbeing scale: previous well-being work, with a strong focus on cognitive judgements about satisfaction, makes no account for positive development that may not be immediately connected with feelings of hedonic satisfaction. In this respect, although the major contribution in her scale may be in terms of assessing meaning and growth (see below), three of the dimensions represent adjustment-related psychological functioning. Chief among these is Environmental Mastery, which captures most literally the sense that personality adjustment represents mastery over the given. By definition, Environmental Mastery relates to an individual’s ability to choose and create suitable contexts, to advance in given environments and to take advantage of the opportunities presented (Ryff, 1989). Environmental Mastery has been shown to have a positive relationship with measures of generativity and competence, two markers of maturity discussed above as subsumed under personality adjustment (Helson & Srivastava, 2001) and with conscientiousness, agreeableness and emotional stability (Ryff, 2013). Positive Relations with Others recognizes the importance of social relations in a number of different theories of self-realization: warmth in interpersonal relations is a sign of maturity, and the ability to love is a part of positive mental health (Ryff, 1989). Scores on this scale have been positively associated with agreeableness, and interact with this trait in predicting life
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satisfaction (Hofer, Busch, & Kiessling, 2008). The third of the PWB dimensions associated with personality adjustment is *Self-Acceptance*. Again, this is an important component of positive mental health, especially relevant in a lifespan context as high scores call for acceptance not only of a current self but also of one’s previous actions and decisions (Ryff, 1989). Although all three of these dimensions clearly relate to positive mental health, the development they support is focused on satisfaction and mastery but not personality growth: to be motivated by the need to have social relations, control over one’s environment, and the ability to maintain a positive view of the self does not require a person to transcend the given. As such, these three dimensions can be understood as conceptually distinct from the other three dimensions (see below). Previous work allowing the environmental mastery, self-acceptance, and positive relations with others dimensions to load together with the three personality traits, emotional stability, conscientiousness and agreeableness, onto a latent Adjustment factor, has provided empirical evidence that dividing the dimensions in this way is indeed viable (Wink & Staudinger, 2016).

**Personality Adjustment in Relation to Resilience**

As mentioned above, personality adjustment has sometimes been understood as a resource that supports resilience, and is also used as a yardstick against which to assess one’s resilience. Much of the resilience literature stems from developmental psychopathology (Staudinger, Marsiske & Baltes, 1995): it is therefore defined in reactive terms, as regaining levels of functioning following trauma, and the maintenance of levels of functioning in times of stress or hardship, which is understood as a function of protective factors (e.g., Garmezy, 1991; Rutter, 1987; Bonnano & Diminich, 2013). However, when resilience refers sometimes to an antecedent resource to assist the return to or maintenance of healthy functioning, the process of doing so, or the outcome of that process, definitions are often somewhat circular,
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generally only describing the lack of expected maladjustment rather than the presence of something (Greve & Staudinger, 2006). It therefore is difficult to conceive of resilience as a personal attribute (see Luthar, Cicchetti, & Becker, 2000). Instead, it has been suggested that resilience is a constellation of resources and stressors with multiple feedback loops, therefore a developmental system rather than a quality of persons (Greve & Staudinger, 2006; Staudinger & Greve, 2016). Personality adjustment serves to maintain functioning and involves specific increases in personality, as such, a form of plasticity akin to resilience (Staudinger & Greve 2016). In this sense resilience can describe not only a reactive process, but also normal development.

Another face of resilience in the literature is development beyond what is typical: when this occurs following trauma, it is sometimes referred to as post-traumatic growth, although there remains confusion about whether increases to a level that is typical really represents growth (see Westphal & Bonanno, 2007) rather than personality adjustment. When resilience really refers to personality development beyond what is typical, whether in response to specific trauma or not, it has been argued that this is qualitatively different from the adjustment-related resilience described above (Staudinger & Greve, 2016). The need to describe changes in personality across the life span, only some of which can be described as resilience, is one more reason that it is important to distinguish between personality adjustment and growth as different trajectories of positive personality development. In addition, it is useful to distinguish between the endogenous or exogenous nature of resilience: although many of the personality changes over the life span appear to be endogenous (i.e., coming from within the person without intervention) and therefore represent the normative acquisition of a buffer against expected challenges in life, such as declines in cognitive functioning, there are also exogenous changes (i.e., in response to intervention) that can stimulate plasticity. This distinction is particularly interesting at the intersection between
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resilience literature and life-span literature on reserve capacity (see Staudinger et al., 1995): resilience can be seen as a type of reserve capacity that maintains normal functioning. A number of exogenous influences have been identified that can stimulate plasticity in a positive direction beyond the typical, such as cognitive training interventions and varied work roles (e.g., Oltmanns, Richter, Godde, & Staudinger, 2016; Mühlig-Versen, Bowen, & Staudinger, 2012) and these could be seen as increasing reserve capacity. When we consider the link between personality adjustment, personality growth and wisdom in these terms, the question emerges whether both normative personality changes (i.e., personality adjustment) and non-normative positive changes (i.e., personality growth) can be considered as reserve capacity for wisdom and what role exogenous intervention might play.

**Personality Adjustment in Relation to Affective Functioning and Goal Investment**

Two other organizing frameworks offer support and explanation for some of the adjustment-related changes in personality. Firstly, an examination of affective functioning over the lifespan suggests that there are two directions that we can follow in engaging emotionally with the tasks and events of our life: affect optimization, which is emotion regulation that favors subjective wellbeing; and affect complexity, which is a more active engagement with a broader range of affective experience (Labouvie-Vief & Medler, 2002). While high levels of either might be considered mature, it is affect optimization that seems closely aligned to personality adjustment: emotion regulation is an important skill that will promote personality adjustment and represents mastery over the realm of affective functioning (Staudinger & Kunzmann, 2005). Although it is assumed that a portion of personality development will be intimately linked with affective development, particularly in the sense that skill in emotional regulation is relevant both to affective optimization and the emotional stability aspect of personality adjustment, by and large, the domain of affective
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development is beyond the scope of this dissertation: Where relevant, the empirical chapters
make reference to the distinction between affect optimization and affect complexity as it
applies to the findings therein. It is mentioned here as another organizing framework that
underscores the legitimacy of conceiving of separate trajectories of development in support of
different goals across the lifespan.

The second relevant organizing framework is Social Investment Theory (see Roberts
et al., 2005). In recognition of substantial cross-cultural consistency in the normative changes
in personality already described above, this theory is grounded in the assumption that despite
some genetic influences, that consistency is due to similarities in the kinds of demands that
being part of a social group entails (see Helson, Kwan, John, & Jones, 2002). Social
Investment Theory focuses on psychological commitment to quasi-universal tasks of social
living such as adopting roles in work and family domains; in this approach, investing energy
in such tasks is the driver for the normative changes in personality because when individuals
adopt new roles, they begin to conform to what they perceive are society’s expectations of
that role (Roberts et al., 2005). In this sense, normative increases in conscientiousness are at
least partly the result of the expectation that many of the adult roles adopted, in most full-
time jobs, in marriage, or in parenthood, require one to become more conscientiousness, and
therefore, investment in the role results in personality development. Other work has identified
that individuals have change goals, i.e., areas of their personalities that they would like to
change, and that they seek roles that may encourage the achievement of those goals (Hudson
& Roberts, 2014; Lodi-Smith & Roberts, 2007). It seems that dissatisfaction with the current
self is one important motivator for the establishment of trait-related goals, and that expected
improvements in life satisfaction underlie such psychological commitments to alter the self to
fit with societal expectations (see Baumeister, 1994; Hudson & Roberts, 2014). This
resonates with Jung’s discussion of enantiodromia, the striving for wholeness through the
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Integration of opposites (see Wink, 1999) in that as we age, we seek to increase that which we lack. It also raises interesting questions that can only be answered by considering that adjustment-related change cannot be the only form of positive personality development: for example, what about goals that do not seem to relate to life satisfaction but to other kinds of positive outcomes? For those who are already sufficiently scaffolded in terms of personality adjustment, and for whom more questioning and more self-development become goals, whether to resolve dissatisfaction or as a function of enantodromia, is it sufficient to label all non-normative change as idiosyncratic? Studies in spirituality and wisdom, for example, suggest clearly that understanding personality growth as a separate developmental trajectory is highly important (Staudinger & Kunzmann, 2005; Wink & Dillon, 2002), lest personality adjustment eclipse other aspects of successful aging (see Sadler & Biggs, 2006).

Subjective Well-being as a Correlate of Personality Adjustment in the Empirical Chapters

The maturity principle (Caspi et al., 2005) describes the way that personality develops in terms of the three Big Five traits of agreeableness, conscientiousness, and emotional stability. There is sufficient empirical support for the proposition that the development of a mature personality in the sense of maturation towards adjustment is related to subjective wellbeing. For example, although there are differences in the changes of Ryff’s dimensions of psychological wellbeing over time, those classified above as components of maturation towards adjustment tend to increase, particularly Environmental Mastery, or remain the same (Ryff, 1991; Ryff, 1989; Ryff & Keyes, 1995). The distinction between affect optimization and affect complexity (Labouvie-Vief & Medler, 2002) is informative in this respect, because of the association between positive affect and subjective wellbeing (Diener, Suh, Lucas, & Smith, 1999): the increasing ability of adults to regulate their emotions towards hedonic tone.
in the manner of affective optimization (Labouvie-Vief, Diehl, Jain, & Zhang, 2007) is an important aspect of personality adjustment. Individually, the three Big Five traits indicating personality adjustment, conscientiousness, agreeableness, and emotional stability, are positively associated with subjective wellbeing (Hayes & Joseph, 2003; Soto, 2015). This speaks of a robust association between subjective wellbeing and personality adjustment: the robustness of that association anchors much of the empirical work of this dissertation. Specifically, a concurrent relationship between the new Personality Adjustment measure and subjective well-being in Chapters 4 and 7 is a good first sign that the measures created have face validity.

Summary

In summary, personality adjustment subsumes earlier conceptions of maturity and competence, social maturity and aspects of intrapsychic maturity, and has overlap with affective optimization and the psychological commitment aspect of social investment. With minor exception, all of these notions of positive development are concerned with mastery over the given. What is considered given are the social structures, supported by families and institutions such as schools and churches, that deliver prescriptions for behavior according to social and cultural mores of the relevant society, and both implicitly and explicitly outline the developmental tasks to be completed in the course of one’s life. Processes of enculturation encourage mastery over the given, promising the benefits of relatedness and positive reputation associated with that adjustment (e.g., Choi, Kim, Drankus, & Kim, 2013), and the development of mature personality traits (Staudinger & Kunzmann, 2005), indicates continued success in social functioning.
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The word *growth* is intimately tied to notions of change, from less to more, from lesser to better. In psychological literature, reference to growth has tended to be in relation to self-realization or openness to and recognition of challenges that will develop the self, for example as eudaimonia (e.g., Ryff & Singer, 2008). Typically, although these approaches offer an important addition to the mental health and well-being literature, they focus on process, without defining clear goals of such self-development. The idea that growth is an important part of personality development stems from a mental health tradition (e.g., Jahoda, 1958) in which personality adjustment is not considered the only, nor always the best, form of maturation, and even sometimes is seen to have a more negative side (e.g., Fromm, 1994a). When endpoints are specified, personality growth describes movement towards realizing virtues such as insight, integrity, self-transcendence, and wisdom: approaching these virtues often requires individuals to transcend the socially prescribed tasks and timings associated with personality adjustment (Staudinger & Kunzmann, 2005). The essence of the distinction may be in the proposed mechanisms driving progress on the two pathways: while adjustment begets adjustment, through a motivation to seek subjective wellbeing in the face of challenges, personality growth is sparked by pursuing disruption and challenge, the active stepping away from the comfort that feeds personality adjustment. This is somewhat similar to distinctions between hedonic and eudaimonic wellbeing (e.g., Ryan & Deci, 2001; Ryff & Singer, 1998; Waterman, 1993), but personality growth does not map directly onto eudaimonia. This is particularly because eudaimonia is not typically defined as leading towards wisdom, and is focused on the development of the self: transcending egocentric development and balancing one’s own good with the good of others is an important part of personality growth towards wisdom (Staudinger & Kunzmann, 2005).
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Therefore, while personality adjustment develops in support of mastery of the given, personality growth represents transcendence of the given. The transcendence of what has been laid out for us by society implicates personality growth. In the psychodynamic tradition, growth has been associated with transcending ego boundaries (Wink & Helson, 1997). For example, for Jung, successful development required a decentering of the ego, to acquire a form of objectivity about the self that is not possible if we are preoccupied with concerns about the self, such as our own death (Eisendrath & Hall, 1991), and for Erikson, who explicitly discussed development towards wisdom, one’s earlier development must be put in perspective (Erikson & Erikson, 1997). Without necessarily stipulating wisdom as an endpoint to personality growth, others have emphasized innate tendencies towards growth (e.g., Horney, 1991; Maslow, 1954; Rogers, 1962), which can only be pursued through the transcendence of varying constraints such as a neurotic focus on needs, on achieving prescribed tasks to meet social goals, and undue reliance the positive regard of parents. Thus, many of the earlier growth theorists have characterized encounters with the given of our social contexts as distracting rest-stops in the more important journey of self-development, a journey that transcends social structures and is common to human existence (Fromm, 1994b), but a journey that did not always have a specified goal (such as wisdom). Given the rarity of such growth, which represents a departure from the typical trajectory of development (Helson, Jones, & Kwan, 2002) it has been useful to distinguish individuals according to their interest in, or orientation towards, such development, for example in terms of openness to growth (Glück & Baltes, 2006), emancipatory interest (Holliday & Chandler, 1986), and questing for meaning (Kramer, 1990). All of these growth-related constructs share a sense of the need for transcendence of, rather than preoccupation or prolonged engagement with, the typical concerns of the life course. Although not frequently made explicit, there is an implication that such transcendence will lead to concern for others (Bauer, Park, Montoya, &
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Wayment, 2015; Staudinger & Kunzmann, 2005; Sternberg, 1998), in the sense that one’s own needs become balanced with the needs of others and society to enhance the common good.

**Personality Traits Associated with Personality Growth**

While the rarity of maturation towards growth in personality development has repeatedly been asserted (Staudinger & Kunzmann, 2005), its persistent presence in mental health literature and personality development theory indicate that it is highly valued. Understanding what factors contribute to this kind of development is therefore very important. From wisdom and personality literature, it is clear that one Big Five personality characteristic is related to personality growth: openness to experience (Mickler & Staudinger, 2008; Ryff, 1989; Staudinger & Pasupathi, 2003). Its role as a possible antecedent of wisdom is as a marker of tolerance and open-mindedness, which is characteristic of higher levels of postformal thought in the Neopiagetian tradition (Staudinger, Dörner, & Mickler). Openness to experience is a personality dimension that represents an individual’s openness or closedness to fantasy, aesthetics, feelings, actions, ideas and values, and that is related to, but distinct from, intellect (McCrae, 1993). It has been associated with eudaimonic wellbeing and interest (Vittersø & Søholt, 2011), identity exploration (Klimstra, Luyckx, Goossens, Teppers, & De Fruyt, 2013), creativity and divergent thinking (McCrae, 1987), moral reasoning and general wisdom (Dollinger & Kilman LaMartina, 1998; Pasupathi & Staudinger, 2001; Staudinger et al., 1997) with wisdom-preparedness (Glück & Baltes, 2006), and personal wisdom (Mickler & Staudinger, 2008; Webster, 2003).

Openness increases in adolescence to young adulthood and then tends to level off and even decline in late adulthood (Lucas & Donnellan, 2011; Roberts et al., 2006; Staudinger, 1999). This occurs alongside declines in the cognitive resources of older adults (see Mickler
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& Staudinger, 2008), and it is therefore likely that openness has an important role in the accumulation of resources for wisdom, presumably in the tendency of a person to seek sufficient new experiences that challenge previously gained insights (Glück & Baltes, 2006) and to be open to new and possibly contradictory ideas about the self. The wisdom-unfriendly normative trends of declining cognitive functioning and openness, and increasing rigidity (Staudinger, 1999) are eroding forces that some individuals hold fast against: while there is potential in some persons for at least temporary defiance of these forces to produce higher wisdom-related performance (Glück & Baltes, 2006, Staudinger, 1999), it is not clear how it comes to be that some people retain the potential for wisdom and others lose it: personality traits, in particular openness to experience, seem to be an important part of this.

Beyond Personality Traits: Personality Growth and a Dynamic View of Psychological Wellbeing

As with personality adjustment, there are a number of features of personality growth that are not captured by personality traits. Chief among these is the most eudaimonic dimension of Ryff’s Psychological Wellbeing measure (Ryff, 1989), personal growth, which is concerned with having a sense that one is developing as a person and increasing in self-knowledge and the motivational dimension of purpose in life, which reflects a person’s sense that life has meaning and possession of goals that will support that sense of meaning.

Autonomy, another dimension of Psychological Wellbeing, is sometimes considered an adjustment-related precondition for personality growth rather than a sign of personality growth itself (Staudinger & Kunzmann, 2005). The different dimensions may therefore play different roles in personality growth at different ages, for example with autonomy more important earlier in life, and the maintenance of purpose in life and personal growth more important later (see Ryff, 1991).
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Among older adults, it has been established that personal growth, autonomy and purpose in life are significant indicators of a latent Growth factor (Wink & Staudinger, 2016). Ryff’s scales have seldom been used with adolescent samples (Crespo, Kielpikowski, Pryor, & Jose, 2011; Cuadra & Moyano-Díaz, 2012; Sirigatti et al., 2009) partly because adolescent work on personal development has tended to focus on adolescence-specific development rather than looking for continuity into adulthood.

For example, the primary developmental task associated with adolescence is identity achievement, which requires exploration of roles. While developmental task completion is associated with personality adjustment, identity exploration requires and indeed is associated with openness to experience and is therefore a crucial feature of personality growth. In this sense some increase in personality growth is itself a developmental task during adolescence, forcing the question of whether a distinction between personality growth and adjustment in adolescence is viable. Is personality growth in adolescence actually therefore so closely linked with personality adjustment that they should not be considered separate constructs? Without demonstrating that the distinction is viable in adolescence, it is difficult to theorize about the beginning of longitudinal connections between personality development and later life wisdom.

Personality Growth in Relation to Affective Functioning and Goal Investment

As discussed earlier, personality adjustment is associated with affect optimization, while personality growth is associated with affect complexity (Staudinger & Kunzmann, 2005). Of particular relevance is that in Labouvie-Vief’s framework, the highest levels of functioning require both orientations to operate simultaneously, such that complexity is tempered by optimization (i.e., seeking differentiation and objectivity is constrained by seeking positive affect) and optimization is tempered by the openness and differentiation of
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affect complexity (Staudinger, Dörner, & Mickler, 2005). This raises questions about how the highest levels of functioning should look in terms of personality growth and adjustment: does wisdom occur in those who are high in personal growth who do not also have high levels of personality adjustment, or is there also complex interplay between these personality constructs? Considering this over a life span is also a vital question. What leads to emotional complexity may be the scaffolding of various other qualities, including openness to experience and emotional intelligence (Ong & Bergeman, 2004): and this encourages the search for possible scaffolds for personality growth as well, of which personality adjustment may be one.

Earlier, when discussing personality adjustment, I addressed Social Investment Theory as it describes important goal-directed behavior that may explain the trajectory of personality adjustment. This theory has less relevance to personality growth, as is apparent from the word ‘social’ and its focus on describing normative investments. Research on social investments has, however, found an important dynamic relating to openness to experience: as opposed to predicting or resulting from psychological commitment to roles, increases in openness to experience were associated with changes in job involvement (Hudson, Roberts, & Lodi-Smith, 2012). More importantly, if it follows that personality adjustment is related to social investment, then personality growth should be related to investment in the self, or goals that are explicitly about developing and transcending the self. Such goals have indeed already been discussed above, because they are incorporated into Ryff’s and Purpose in Life dimension in particular. In addition, an investigation of narrative growth goals, which can be intellectual (how one thinks) or socioemotional (how one feels and acts), shows that having goals that relate to personal growth is related to increased ego development, but not subjective well-being, three years later (Bauer & McAdams, 2010). Cross-sectionally, this has been supported using two scales measuring growth motivation, the Personal Growth
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Initiative Scale, and the Growth Motivation Index, with the identification of a reflective dimension of growth that is related to wisdom but not happiness (Bauer, Park, Montoya, & Wayment, 2015). These studies, although focused on the motivational rather than personality aspects of growth, provide strong support for the expectation that personality growth will demonstrate longitudinal impact on later life wisdom.

Personality Maturation towards Growth and Wisdom

The robustness of the association between personality adjustment and subjective well-being is due to a substantial body of empirical work dedicated to the description of that very relationship as the core of maturation. However, because the understanding of personality growth as an independent, complementary aspect of positive personality development is relatively understudied, the longitudinal relationship between maturation towards growth and wisdom remains almost entirely theoretical (cf. Ardelt et al., 2018). One important reason for this is that the prototype for personality growth, wisdom, is understood as rare, so maturation towards growth should therefore be relatively difficult to detect in representative samples. However, there is cross-sectional support, as outlined in previous sections: openness to experience, psychological mindedness and Ryff’s personal growth are all related to wisdom and to each other (Abbott et al., 2008; Pasupathi et al., 2001; Ryff & Singer, 2008; Staudinger et al., 1997) and have been subsumed under a latent Growth factor in one study (Wink & Staudinger, 2016). Openness to experience in particular, which involves a willingness to reflect on experiences gained, shares a relationship with wisdom that seems to reach across measurement paradigms (Glück et al., 2013; Mickler & Staudinger, 2008). Because of extensive longitudinal work on this personality trait, it is possible to draw parallels with a hypothetical personality growth trajectory. It has been proposed that increases in openness in early adulthood are beneficial in developing skills for life insight, and decreases later in life reflect cognitive declines, for example in abstract thinking, alongside a
loss in quality of insight due to overly positive self-evaluations (Mickler & Staudinger, 2008). Other indicators that share a similar trajectory of stability or decline from middle adulthood include Ryff’s Personal Growth and Purpose in Life dimensions, affect complexity, and ego development (Reitz & Staudinger, 2017). While there are biological and contextual factors, including social expectations and stereotypes of aging that both promote personality growth and contribute to declines in openness in later life (Reitz & Staudinger, 2017), these biological and contextual factors do not overwhelm the importance of personality growth as a path to wisdom. There are clear propositions that openness to growth, for example, is vital for building and maintaining a resource profile from which wisdom can be produced (Glück & Baltes, 2006), that some level of personality adjustment is necessary but not sufficient for wisdom to develop (Staudinger & Kunzmann, 2005). The specific mechanisms of that hypothetical relationship are not clear, but personality growth without sufficient personality adjustment can easily be seen as a possible source of distress: not being able to regulate emotional responses experienced in response to intense scrutiny of one’s own experiences and reactions could allow anxiety to be unleashed, which could lead to maladjustment overwhelming whatever insight might have been gained. Thus, while the empirical chapters incorporate checks for a relationship between personality adjustment and wisdom, the strongest conceptual link is expected to hold, both concurrently and longitudinally, with personality growth. The strength of this expectation is grounded in the paradigm used for the measurement of wisdom, as it is already clear that self-report measures of wisdom are less psychometrically distinct from personality adjustment than the performance approach. This distinction, and a brief introduction to the Berlin Paradigm used in all three empirical papers, is below.
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Wisdom: Conceptual Distinctions and Approach to Measurement

Psychologists have been engaged with the task of measuring wisdom at least since the 1980s, with to date six different measures receiving substantial attention in psychological literature (see Glück et al., 2013; Staudinger & Glück, 2011). A thorough discussion of the nature of wisdom is beyond the scope of this dissertation, but it is necessary to clarify what is within its scope. An early decision in this project not to use self-report measures of wisdom but to exclusively use the Berlin Paradigm, a performance measure of wisdom, was guided by two main considerations: first, despite their popularity, self-report measures have a number of possible drawbacks compared with performance approaches, especially when covariance with other self-report measures is an important element of analysis; and secondly, high quality data was available that had used this paradigm to measure wisdom. This decision gave the empirical chapters the benefit of consistent use of the preferred measurement paradigm, and this also means that certain assumptions have been made about what wisdom is. What follows is not an analysis of those assumptions, but rather a brief overview. The Berlin Paradigm is a performance measure of general wisdom, and it is helpful therefore to distinguish between performance and self-report measures, and between general and personal wisdom.

Self-report vs Performance Measures

The most popular measures in recent years are the self-report inventories, which include the Self-Assessed Wisdom Scale (Webster, 2003), the Three-Dimensional Wisdom Scale (Ardelt, 2003), and the Adult Self-Transcendence Inventory (Levenson, et al., 2005). Their popularity stems partly from their ease of use, but concerns have been raised, firstly because of an emphasis on dimensions relating to socioemotional development and self-management, which make them very conceptually close to measures of personality and
emotional intelligence (Law, Staudinger, & Zacher, 2018; Zacher, McKenna, & Rooney, 2013). Secondly because items in these self-report measures typically have high face validity for wisdom, the scales are susceptible to the inaccuracy of self-judgement and social desirability effects, for example causing someone who is low in wisdom but with high self-esteem to provide an overestimation of their wisdom, while in the manner of the Socratic paradox, a wise person may underestimate their own wisdom (see Meacham, 1982).

The other approach has been to employ performance measures. Three of these have received attention in recent years: the Bremen Paradigm, for measuring personal wisdom (Mickler & Staudinger, 2008); the Berlin Paradigm, for measuring general wisdom (e.g., Staudinger et al., 1997); and Grossmann’s wise reasoning approach, which has to date been used mostly in relation to general wisdom (e.g., Grossmann, Na, Varnum, Kitayama, & Nisbett, 2013). The clear advantage of the performance approach is that it avoids the inaccuracy of self-judgment in self-report, but it is time-consuming, and as such the Berlin Paradigm has not been widely used, restricted to German and U.S. samples to date, albeit with promising similarity in results in those samples (Wink & Staudinger, 2016). The datasets used in the empirical chapters of this dissertation used the Berlin Paradigm to assess participants’ general wisdom: as such, this approach is the only one employed in the empirical chapters of this dissertation.

**Personal vs General Wisdom.**

Personal wisdom has been described as a person’s insight into or perspective on his or her own life. In contrast, general wisdom involves insight into life in general, employing an observer’s perspective (Mickler & Staudinger, 2008). Although both subtypes require high levels of insight, it is not yet clear whether both tend to reside in the same person; that is, whether the same developmental path will lead to high levels of both personal and general
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wisdom. Some elements of general and personal wisdom seem to be shared; for example, the detached concern with life that Erikson related to wisdom in later life (Erikson & Erikson, 1998) probably applies to both types. While concern seems less likely to be useful in application to the self than to others (c.f., Sternberg, 1998), detachment from the distress of others is an important aspect of the development of empathy, in the sense that personal distress is a typical reaction of children to observing the emotions of others (Davis, 1980). Detachment might also be a form of coping while reflecting on one’s own emotional reactions, for example in terms of self-regulation (Mickler & Staudinger, 2008) and the use of humor (Webster, 2003). On the other hand, the experience of disruptive life events that cause a change in thinking about one’s life (Bluck & Glück, 2004) seems to be more applicable to the development of personal wisdom. Only one study has measured both types of wisdom and found that indeed there is a substantial zero-order relationship between them, but with important differences in the pattern of their relations with other variables: intelligence, openness to experience and self-concept maturity were related to both general and personal wisdom; subjective well-being was only related to general wisdom; and both ego development and a medium number of life events was related to higher levels of only personal wisdom (Mickler & Staudinger, 2008).

Throughout this dissertation, the focus is on personality development as an antecedent of general wisdom, not personal wisdom. This is not to suggest that personality development contributes only to general wisdom, but rather to focus only on establishing whether, and how, personality development influences general wisdom.

The Berlin Paradigm

Because wisdom is difficult, if not impossible, to observe and measure directly, the Berlin Paradigm elicits advice for difficult life problems such as a friend contemplating
suicide, or a 15-year old wanting to get married immediately. There is no judgement of whether the advice is right or wrong, but rather peers rate the responses according to five criteria: rich factual and procedural knowledge about human nature and the life course, lifespan contextualism, value relativism and tolerance, and the awareness and management of uncertainty. Together, ratings on these five criteria represent an individual’s wisdom-related performance, a continuous variable with a range of possible scores between 1 and 7 that represents the average of peer ratings across tasks and criteria. The criteria address problems that are intended to transcend cultural boundaries by virtue of being related to anthropological constraints (Staudinger & Pasupathi, 2003), such as the terminality of life. Very high performance across tasks should represent wisdom, and this is, appropriately, quite rare. While the study of high scoring individuals is an important pursuit, their rarity makes it a difficult pursuit. Using wisdom-related performance assumes a degree of continuity between low scorers and high scorers that allows for comparisons.

As such the Berlin Paradigm measure of wisdom-related performance features in all three of the empirical chapters of this dissertation. Its advantages over other measures include a rigorous validation history and use in samples from two countries, and its robustness against the deficiencies of self-report. Limitations of the measure include a possible underestimation of true levels of wisdom (Pasupathi et al., 2001), the lack of consistent social contexts to make the tasks relevant to the participant and the favoring of value relativism at the expense of ethical absolutes (Grossmann et al., 2013).

Summary

Personality growth incorporates notions of differentiation and transcendence from a number of different schools of thought in psychology. Core to the understanding of personality growth in this dissertation is that it does not represent unspecified self-
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development or self-actualization, but goes beyond that, representing a more balanced integration of development that is also directed towards wisdom, and concern for the good of both self and others.

Despite some cross-sectional evidence using latent constructs indicated by extant personality measures (Wink & Staudinger, 2016), there is to date no direct measure of personality growth or personality adjustment, understood as two separate but related dimensions of positive personality development. While it is informative to continue using extant measures of other constructs in research, the creation of a direct measure in the following empirical chapter opens doors to further work testing the propositions regarding the importance of personality growth in the development of later life wisdom.
IV. STUDY 1: Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT

Q-sort scales for Personality Growth and Adjustment:

Longitudinal validation in an adult lifespan sample

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Abstract

Objective: To further validate the distinction between adjustment and growth as two forms of positive personality development, we aimed to construct scales for the two constructs, examine their convergent and divergent validity at late adulthood, and establish measurement invariance throughout adulthood.

Method: After obtaining expert agreement on Q-sort profiles, we constructed Adjustment and Growth scales. With data from 299 participants in the Institute of Human Development’s longitudinal studies, we used structural equation models to examine convergent and divergent validity at late adulthood (approx. 73yrs) in relation to latent Growth and Adjustment factors based on established personality measures. We tested measurement invariance in single group confirmatory factor analyses across four adult waves from young adulthood (approx. 34 yrs) to late adulthood.

Results: At late adulthood, Adjustment and Growth scales showed positive associations only with their respective latent factors, demonstrating construct validity. After further optimization of the scales, we established partial measurement invariance across four waves for Adjustment and in two sets of three waves for Growth.

Conclusions: Results support the distinction between growth and adjustment as two forms of positive personality development throughout adulthood. The Adjustment and Growth scales are viable for further research as measures of these positive personality constructs.

Keywords: growth, adjustment, wisdom, personality, Q-sort
IV. Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT

One way to characterize differences in positive personality functioning is in terms of adjustment and growth; described as two distinct but related trajectories of personality development, they lead towards different endpoints. Personality adjustment is associated with subjective well-being (SWB) and personality growth with increases in wisdom-related judgment and insight (Staudinger & Kessler, 2009; Staudinger & Kunzmann, 2005). To date, cross-sectional data from Big Five personality inventories (John, Donahue, & Kentle, 1991), Ryff’s Psychological Well-being Scale (PWB, Ryff, 1989) and measures of life satisfaction, have been employed as indicators of latent adjustment and growth (e.g., Law, Staudinger, & Wink, 2018b; Wink & Staudinger, 2016). To our knowledge, no scales uniquely capturing these two dimensions exist. Using a longitudinal dataset that covers adulthood from approximately 34 years of age, to approximately 73 years of age, and which includes measures of wisdom-related performance and SWB in later life, the goals of this study were three-fold: we first constructed Q-sort based scales of Adjustment and Growth. Secondly, we established their construct validity in terms of convergence with and divergence from other measures that were available at late adulthood. Thirdly, we established a factor structure for each scale that fit at all four time-points and then tested these for measurement equivalence across the adult lifespan.

Adjustment and Growth: Two Dimensions of Positive Personality Development

It has been argued that the typically observed changes in personality during adulthood (increases in agreeableness, conscientiousness and emotional stability) are only one form of positive development, representing increasingly successful adherence to a socially prescribed timeline of mastering developmental tasks (sensu Havighurst, 1972). This kind of adjustment is reflected in three dimensions of Ryff’s PWB scale (Ryff, 1989): A sense of well-being gained from a feeling of control over one’s circumstances and the ability to make use of
opportunities (Environmental Mastery); having warm, satisfying relations with others (Positive Relations with Others); and having a positive attitude towards self and life (Self-Acceptance), all of which show age-related increases. This positive trajectory, labelled adjustment, is contrasted with a growth trajectory, which requires transcendence of social structures and involves high levels of reflection, insight, and a motivation to move beyond the given, in order to increase the common good (Staudinger & Kunzmann, 2005).

Earlier discussions of maturity have included a related distinction between social maturity and intrapsychic maturity (Helson & Wink, 1987): social maturity is related to our notion of adjustment. Although Helson and Wink’s intrapsychic maturity is probably associated with growth, our notion of growth is not only focused on self-development. It incorporates the other three dimensions of Ryff’s PWB scale: a sense of well-being from having goals (Purpose in Life), a sense of continued development and openness (Personal Growth) and the ability to resist social pressures and be independent (Autonomy). To date, to our knowledge, there are no scales that measure adjustment and growth. In order to facilitate further investigation into the functioning of growth and adjustment in a longitudinal sample, we aimed to construct scales that have good construct validity and show an acceptable level of measurement invariance across the adult lifespan.

Construction and Validation of Personality Scales Using Longitudinal Q-sort Data

A number of studies have previously reported on the creation of scales based on the Q-sort data of the Institute of Human Development’s longitudinal studies (e.g., Jones & Peskin, 2010; Mallory, 1989). Such studies have used expert ratings to create prototypes against which participants can be compared (e.g., Livson & Peskin, 1967; Mallory, 1989), or summative scales based on the most characteristic Q-sort items (e.g., Peterson & Klohnen, 1995; Wink, Ciciolla, Dillon, & Tracy, 2007). For this paper we followed the latter approach
by asking experts to carry out Q-sorts for imagined individuals high in adjustment and separately high in growth and used those ratings to select items for inclusion in scales.

Construct validity can be demonstrated through tests of convergent and discriminant validity: high correlations should be observed with independent measures of similar constructs, and correlations should be small or non-existent with dissimilar ones (Campbell & Fiske, 1959). Given the recognition that personality-related constructs may differ at the various stages of life, particularly in terms of their relations with other constructs, (Soto & Tackett, 2015; Staudinger & Pasupathi, 2003), it would be ideal to investigate convergent and divergent validity of our new scales separately at each life stage. The intense use of well-validated instruments to act as external criteria in the final wave of the IHD longitudinal studies presented an excellent opportunity to examine construct validity, but the same was not available for other waves.

While there are no existing one-scale measures of personality growth and adjustment with which to compare our measures, there is sufficient theoretical and empirical work on growth and adjustment constructs to formulate hypotheses about the pattern of relations to be expected: This body of literature and our expectations are addressed next.

**Personality adjustment: Convergent and divergent validity.** Adjustment-related changes in personality should result in higher levels of subjective well-being and higher levels of growth result in more wisdom in later life. This pattern of associations has been demonstrated cross-sectionally (Wink & Staudinger, 2016), treating adjustment and growth as latent variables indicated by a combination of Big Five personality traits, Ryff’s PWB dimensions, and measures of subjective well-being.

Throughout adulthood, mean levels of conscientiousness increase to a peak at late adulthood (Roberts, Walton, & Viechtbauer, 2006) and are associated with increased
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adherence to social roles and conventions that accompany increases in adjustment (Staudinger & Kunzmann, 2005). Decreases have sometimes been found in late adulthood (Donnellan & Lucas, 2008) and facets have sometimes been found to have different trajectories (Jackson et al., 2009). The desire to avoid negative emotions from scrutiny of the self, developed at the expense of emotional complexity (see Labouvie-Vief & Medler, 2002), is captured by the Big Five trait of emotional stability (absence of neuroticism) and also tends to increase into late adulthood (Roberts, Walton, & Viechtbauer, 2006). Agreeableness, as an indicator of warmth and a desire to maintain social relationships and avoid antagonizing others (Costa Jr., McCrae, & Dye, 1991), even at the expense of autonomy and self-expression, is another facet of adjustment that contributes to well-being (see DeNeve & Cooper, 1998; Diener, Oishi, & Lucas, 2003) and also increases to a peak in late adulthood.

Ryff’s dimensions of Psychological Well-being indicate the degree to which specific areas of psychological functioning contribute to a sense of well-being. Three of these dimensions; Positive Relations with Others, Environmental Mastery and Self-Acceptance, have been defined to index adjustment (Staudinger & Kunzmann, 2005), and this conceptualization has been confirmed empirically in older adults (Wink & Staudinger, 2016), and adolescents (Law et al., 2018b).

According to the maturity principle (Caspi, Roberts, & Shiner, 2005), it is in late adulthood that the personality traits we associate with adjustment are at their peak. This could manifest in some skewed distributions for many of the items we included. However, we still expected the new Q-sort Adjustment scale to show convergent validity with the above measures at late adulthood.

**Personality growth: Convergent and divergent validity.** One of the key indicators of personality growth is wisdom-related judgment and insight. Encounters with uncertainty,
new experiences and challenges, reflection, and increasing insight, are all considered important in the development of wisdom (Staudinger & Kunzmann, 2005). Developments in these characteristics enable a person to engage with the one’s own experiences and those of others in such a way as to be able to provide advice, and to demonstrate the knowledge, sagacity and detached concern that are variously associated with wisdom. Wisdom is therefore a particularly useful construct for testing the convergent validity of a new personality measure of growth. We expected a large amount of shared variance between our new Growth scale and wisdom-related performance, while measures of subjective well-being, such as indices of life satisfaction, should share variance with our new Adjustment measure (Staudinger & Kunzmann, 2005). In our conception of personality growth and adjustment, if there is a relationship between adjustment and wisdom, it should be explained by the relationship between adjustment and growth, such that growth retains direct effects in a mediation model but adjustment does not (Wink & Staudinger, 2016). Because previous research has demonstrated a relationship between wisdom and the understanding of psychological issues (Pasupathi & Staudinger, 2001; Staudinger, Lopez, & Baltes, 1997; Wink & Staudinger, 2016), in the present study we also expected strong relationships between the Growth scale and the Psychological Mindedness component of the California Psychological Inventory (CPI, Gough & Bradley, 1996/2002).

As indicated above, the primary personality characteristic associated with growth is that of openness to experience, which also is a significant predictor of wisdom-related performance (e.g., Staudinger, Lopez, & Baltes, 1997). This Big 5 trait represents an active preference for new and different experiences, along with flexibility of thinking and belief (McCrae, 1994). Three dimensions of Ryff’s PWB scale are also indicative of growth: Purpose in Life, Personal Growth, and Autonomy together index the well-being a person derives from a sense that life is meaningful, from a sense of continued personal development,
and from a sense of self-determination, and have all been associated with wisdom-related performance (Staudinger & Kunzmann, 2005; Wink & Staudinger, 2016) and openness to experience (Schmutte & Ryff, 1997). Accordingly, we expected positive associations with the new Growth scale.

Again, because we were only able to test construct validity at the final time-point, it was necessary to consider whether our expectations would be different at late adulthood. It was not as clear what to expect from Growth. Some of the associated constructs, such as Purpose in Life, may differ in terms of level (e.g., Pinquart, 2002), and may over time become more associated with typical development and therefore personality adjustment rather than personality growth. However, the major possibility for a difference comes from the cumulative effects of growth over time: when wisdom manifests later in life, it is after an orchestration of personal and contextual factors has had time to take hold (Baltes & Staudinger, 2000). While high levels of growth may be required during the course of a person’s life in order for wisdom to develop, it may not be the case that all aspects of growth are sustained during late adulthood among those who have already progressed on this trajectory. The desire to accumulate new experiences, for example, may be less relevant than the ability to reflect on those already gained without causing oneself emotional distress. Herein lies the importance of testing items for invariance over time: it is certainly expected that some items will be more or less salient to growth over time and this will manifest in or inconsistent factor structures or non-invariance of items at different waves.

**Longitudinal Invariance Testing**

Despite the existence of up to 4 waves of adult data, relatively little work has previously investigated the longitudinal invariance of Q-sort measures created from the IHD dataset. In this paper, we apply a Confirmatory Factor Analysis (CFA) approach to invariance
testing (Widaman, Ferrer, & Conger, 2010). Invariance testing across time examines whether changes in observed indicator scores represent changes in the latent constructs they indicate, rather than representing changes in the measurement properties of those items over time (Horn & McArdle, 1992). This is a crucial prerequisite for any kind of valid developmental examination. To facilitate future investigation of the nature of change in adjustment and growth using the scales created in this study, we aimed to establish as much invariance as possible across the adult life-span from young to late adulthood. Establishing the highest levels of invariance in studies relating to aging is generally an ambitious task (Horn & McArdle, 1992), however, we expected to find at least partial measurement invariance (Byrne, Shavelson, & Muthén, 1989) to support meaningful comparison of the Growth and Adjustment scale scores across the adult life-span.

**The Present Study**

We firstly hypothesized that it would be possible to establish high expert-rater agreement in selecting items from the California Q-sort as prototypical for personality growth and adjustment. Our second and third hypotheses concerned convergent and divergent validity: the new Adjustment scale was expected to be positively associated with a latent Adjustment factor indicated by established measures of personality adjustment but not a latent Growth factor, and likewise the Growth scale was assumed to be positively associated with a latent Growth factor indicated by established measures of personality growth, but not a latent Adjustment factor. We expected a small positive or zero relation between the two scales.

Our fourth hypothesis was that we could establish a factor structure for the scales created from those expert ratings that would show some degree of invariance across four waves in adulthood (approx. 34 - 73 yrs.): Allowing for the removal of items that were
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clearly inconsistent in their pattern of associations with other items over time, we expected to be able to establish configural invariance with the same number of factors and the same items loading on them and at least partial metric invariance across adulthood.

Method

Participants

We used data from two separate longitudinal studies that were started in the 1920s in the San Francisco area of the United States and later combined: the Berkeley Guidance (GS) and Oakland Growth (OGS) studies. For fuller information about participants in the Institute of Human Development’s (IHD) GS and OGS, see Block and Haan (1971) and Eichorn (1981). The participants from the GS are a community sample of children born in Berkeley, California in 1928-1929. Their families were assigned to a guidance group or a control group in order for researchers to test the effect of parenting advice on children’s development. The children were studied in detail using a variety of approaches including psychological and medical examinations and interviews. Those in the control group were studied less intensively and later work showed no significant differences in the effects on the children (Eichorn, 1981). The Oakland Growth participants were born in 1920-1921 and were recruited at approximately 12 years old as they enrolled in one junior high school. This study was focused on adolescent development and used many of the same methods but with different aims. In the 1960s, Jack Block and colleagues merged the two studies, effectively creating two separate cohorts in a single ongoing study. Subsequently, participants were interviewed in depth at least four further times with several other measures including projective tests and the California Personality Inventory (CPI) used according to the research agenda of the time. For the present study, we therefore had access to data for 299 participants from at least one of four adult time points: interviews with adults were conducted in 1958,
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1970, 1982 and 1997-2000. The older (OGS) participants were therefore aged (approximately) 38, 50, 62 and 77, and the younger (GS) were aged (approximately) 30, 42, 54 and 69. Participants in these studies have been described as representative of those living in the San Francisco Bay Area at the beginning of the study, predominantly white with relatively high family income levels. Over time, a tendency was noted towards lower participation among those with low levels of education (Clausen, 1993).

Scale Construction

**Expert ratings of prototypes.** When combining the Berkeley Guidance and the Oakland Growth studies, Jack Block and colleagues decided to harmonize the varied assessments by assigning case histories to raters who then used the California Q-sort to establish an ipsative description of each participant at each time-point. The 100 adult Q-sort items are placed by raters in a normal distribution with five items at each extreme indicating maximum appropriateness or inappropriateness of the item as a descriptor of a person. Each participant’s file was rated by at least two raters, and additional raters were sought when inter-rater agreement for the full sort was less than .45 (Block & Haan, 1971). This Q-sort data has been used to create prototypes for several psychological constructs, including psychological health (Livson & Peskin, 1967), identity status (Mallory, 1989), a notion of wisdom (Wink & Dillon, 2013), and generativity (Peterson & Klohnen, 1995).

Validation Measures

**Indicators of growth.** *(i) Wisdom-related Performance (WRP)* was measured using the Berlin Wisdom Interview. This is a performance measure of wisdom, which in addition to its rigorous validation history (see Baltes & Staudinger, 2000), is particularly advantageous in this study alongside self-report measures, because it prevents common-method bias, which can lead to overestimating associations. Participants were presented with important life
dilemmas, and their responses were coded by trained raters one each of five criteria on a seven-point scale. A participant’s WRP is their average score across criteria and tasks. It has been empirically linked to personality growth (Law et al., 2018b; Wink & Staudinger, 2016) and as such we expected it to be a strong indicator in the present analysis. The overall Cronbach’s alpha coefficient for WRP in the sample used here was .84 and the mean score was 2.18 (N = 163, SD = .85). (ii) *Openness to Experience* was measured using a subscale of the Big Five Inventory (John et al., 1991). Participants rated the self-applicability of 10 statements such as “Has a wide range of interests,” and “is insightful, sees different possibilities” using a 5-point Likert scale, with a Cronbach’s alpha coefficient of .80 (N = 117). (iii) The *Psychological Mindedness* subscale of the California Psychological Inventory assesses insight and understanding the feelings of others and had an alpha value of .572 (N = 119). (iv) Finally, we aggregated three scales from the Psychological Well-being questionnaire (PWB; Ryff, 1989), previously identified as indicators of *Well-being from Growth* (Wink & Staudinger, 2016): Personal Growth (N = 144, α = .78), Purpose in Life (α = .73) and Autonomy (α = .74).

**Indicators of Adjustment.** (i) Three other BFI personality characteristics are considered indicators of adjustment: *Agreeableness, Conscientiousness* and *Emotional Stability* (the reverse pole of Neuroticism), with respective alpha reliabilities of .69, .75, and .81, were assessed using subscales of the BFI (John et al., 1991). (ii) In addition to this, scores from the remaining three subscales of the Ryff PWB scale, *Environmental Mastery* (α = .77), *Self-Acceptance* (α = .81), and *Positive Relations* (α = .83) were aggregated and used as a composite measure of *Well-being from Adjustment*. (iii) Finally, we included *Life*.

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2 The answer format for this measure is dichotomous and may therefore underestimate reliability.
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*Satisfaction*, as measured with the Diener et al. (1985) Satisfaction with Life Scale (*N*=157, \(\alpha=.90\)), a widely used 5-item scale. Example items are “In most ways my life is close to my ideal” and “I am satisfied with my life.” Ratings were provided on 7-point scales ranging from 1 (strongly disagree) to 5 (strongly agree).

**Analytic Strategy**

Our analyses were organized in four steps: we began by constructing the scales based on expert-ratings and an evaluation of scale reliability using Cronbach’s alpha and test-retest reliability using intraclass correlations (ICC). Secondly, we tested for convergent and divergent validity of these latent measures at the final time-point, which was selected because it offered a range of additional well-validated measures unavailable at other time-points. Thirdly, we investigated the factor structure of the new scales at each time-point, and finally, we tested the longitudinal measurement invariance of the new Growth and Adjustment scales. Below we detail strategies used for testing construct validity and longitudinal measurement invariance.

**Expert agreement on Q-sort Prototypes.** Seven experts\(^3\) in the area of adult personality development carried out two Qsorts using the 100-item adult version to create two prototypes describing individuals high in growth and high in adjustment, with a prototypical description of each construct provided to experts for reference. The task was to sort the 100 items into nine categories ranging from 1, least like the prototype, to 9, most like the prototype. The number of items per category was prescribed: the middle category ‘5’ contained 18 items, with the others following a normal distribution, the two extreme

\(^3\) The authors are grateful to the four experts, Catherine Bowen, Avril Thorne, Michele Dillon, and Bill Peterson, for contributing their time and expertise to this task. In addition, Alan Law, Ursula M. Staudinger, and Paul Wink acted as expert raters.
IV. Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT

categories containing only 5 items. This resulted in a rating for each item from 1 to 9 from each expert rater for Adjustment, and for Growth, respectively.

The mean rating for each item was then used to create the final sort, with the highest positions occupied by the items with the highest mean across judges. When two or more items had the same mean, the item with the lower standard deviation was assigned the higher score, following Mallory (1989). Subsequently, this mean score was multiplied by ten for ease of interpretation. While items rated as highly characteristic of prototypes are considered to be good indicators of the prototype, the reverse is not true of items rated as not characteristic. Many of the items typically rated as not characteristic of the various prototypes actually reflect different forms of maladjustment that are not specific to any given psychological construct. Thus, it is established procedure in scale construction to only include items rated as highly characteristic (Hartman, 2000; Peterson & Klohnen, 1995). We therefore calculated the Adjustment and Growth score for each participant at each time-point by computing the average score for each participant across the using the 13 most characteristic items for each scale.

Confirmatory factor analysis at final wave to establish construct validity. We used CFA in a structural equation modeling (SEM) framework using MPLUS v7 to test whether the newly constructed, Q-sort based scales of Adjustment and Growth were significantly predicted by latent Growth and Adjustment factors based on existing self-report and performance measures conceptually related to growth and adjustment. It was considered advantageous in our analysis that we were able to include this mixture of methodologies when considering the validity of the new scales, which were based on observer ratings. To determine whether non-normality of variables affected model fit, models were run using both the default maximum likelihood estimator and the robust maximum likelihood estimator in
IV. Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT

MPLUS v7 (Muthén & Muthén, 1998-2012), the latter of which does not assume multivariate normality, and compared with results obtained using the default maximum likelihood estimator: fit statistics tended to be better using the default estimator but differences were small and we therefore present results obtained using only the default estimator, which is recommended for smaller sample sizes (Hox, Maas, & Brinkhuis, 2010). In a first step, we established latent Growth and Adjustment factors, and in a second step, added the scale scores as endogenous variables to test relations with the latent factors.

**Longitudinal measurement invariance.** We began testing for longitudinal measurement invariance following Widaman (2010), van de Schoot, Lugtig and Hox (2012), de Beurs et al. (2015), and Chungkham et al. (2013) using exploratory factor analyses with oblique rotations before applying a single group CFA framework in MPLUS.

The current data presented several challenges for applying the tests of measurement invariance. A general difficulty was a relatively small sample of under 300 participants with at least 9 items per wave, with four waves, and therefore few degrees of freedom, which amplified some of the other difficulties.

Some items were negatively skewed in the final wave, threatening the assumption of multivariate normality. Again, we addressed this difficulty by comparing results using the robust maximum likelihood estimator, again presenting only using the default estimator as recommended for smaller sample sizes.

When we tested invariance for the best-fitting, three-factor model for the Growth scale, there was collinearity between the same factors across time-points, indicating high stability of those factors over time, which is developmentally reasonable, but which was problematic for model estimation when all four time-points were included in the model. To avoid this problem, we carried out all invariance tests for Growth first using a single factor
IV. Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT

model to ensure that the problem indeed related to collinearity of factors: this single factor model offered poor fit at each timepoint, but full metric invariance across four time-points. We then tested the three-factor solution in two separate models with only three time-points each, one model with only the first three of the four possible time-points (from young adulthood to mid-late adulthood), and then a separate model with the final three of four time-points (from middle adulthood to later life).

Finally, when evaluating model fit, we considered three values simultaneously, without applying strict combination cutoff rules due to the comparatively small sample (Hu & Bentler, 1999). We considered comparative fit index (CFI) values over .90 as acceptable and over .95 as good. Root Mean Square Error of Approximation (RMSEA) values should be under .06 to be considered good, and close to .08 can be considered acceptable (MacCallum, Browne, & Sugawara, 1996). We finally considered standardized root mean square residual (SRMR) values of .8 or lower to be good.

For the Adjustment and Growth scales separately, we began by establishing a configural invariance model, with factor loadings and intercepts freely estimated. Because the purpose of this step was to establish invariance, at this point we removed items that loaded inconsistently on latent factors when we tried to fit the model separately at each time-point. We then estimated longitudinal metric invariance by constraining factor loadings to be equal across time and aimed to consider scalar invariance by constraining both loadings and intercepts to be equal. In order for an increasingly constrained model to be considered acceptable, model fit indices should not decrease significantly: for our relatively small sample we considered a drop in CFI of ≤ 0.01 (Cheung & Rensvold, 2002; de Beurs et al., 2015) or an increase in RMSEA of ≥ 0.005 to indicate unacceptable decrease in fit (Chen, Curran, Bollen, Kirby, & Paxton, 2008). In the instance of an unacceptable decrease in fit,
IV. Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT

models were altered following modification indices by removing constraints one at a time until the drop in fit was within the acceptable range, to establish partial measurement invariance.

Results

We present results in four sections, first presenting the interrater reliability of the expert ratings of the two prototypes which form the basis for the construction of the Q-sort scales, and relevant descriptive statistics. Second, we provide the results of the structural equation modeling at the final, late adulthood time-point to demonstrate convergent and discriminant validity. Thirdly, we present preliminary investigation of factor structure. Finally, results of measurement invariance testing across the four adult waves are presented.

Reliability of Prototype Ratings and Reliability of Resulting Scales

The mean intercorrelation among the prototypic scores of the seven expert raters was .67 for Adjustment and .66 for Growth. Spearman-Brown coefficients were calculated to show overall interrater reliability accounting for the number of judges involved (Block, 1961); these were .93 for Adjustment and .93 for Growth. Full scales consisting of the 13 items with the highest ratings for each construct were created; the items are presented in Table 3.

We then investigated the alpha reliabilities across the 13 items in each scale and removed three items from Adjustment and one from Growth, that had low item-total correlations at more than one time-point (see Tables 1 and 2), resulting in a 10-item Adjustment scale and a 12-item Growth scale. Reliability for the subsequent scales was good, with alpha coefficients ranging from .73 to .88, with an average reliability of .85 for Adjustment and .79 for Growth over four time-points. Table 3 presents descriptive statistics...
and scale reliabilities for each measurement occasion. In addition, test-retest intraclass correlations for scale scores for the four adult time-points were calculated using SPSS based on means of item ratings, absolute-agreement, 2-way mixed-effects models: for Growth the ICC was .75, CI [.67, .82] and for Adjustment .72, CI [.59, .81].

Table 1. Items Most Characteristic of Adjustment

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>35</td>
<td>Has warmth; has the capacity for close relationships; compassionate.</td>
</tr>
<tr>
<td>9</td>
<td>26</td>
<td>Is productive, gets things done.</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>Is dependable and responsible.</td>
</tr>
<tr>
<td>9</td>
<td>84</td>
<td>Is cheerful, happy.</td>
</tr>
<tr>
<td>9</td>
<td>74(^2)</td>
<td>Feels satisfied with self</td>
</tr>
<tr>
<td>8</td>
<td>17</td>
<td>Behaves in a sympathetic and considerate manner.</td>
</tr>
<tr>
<td>8</td>
<td>32</td>
<td>Seeks to be aware of the impression s/he makes on others.</td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td>Is protective of those close to him/her.</td>
</tr>
<tr>
<td>8</td>
<td>28</td>
<td>Tends to arouse liking and acceptance in people.</td>
</tr>
<tr>
<td>8</td>
<td>75</td>
<td>Has a clear-cut, internally consistent personality</td>
</tr>
<tr>
<td>8</td>
<td>63(^1)</td>
<td>Judges self and others in conventional terms like &quot;popularity,&quot;</td>
</tr>
<tr>
<td>8</td>
<td>7(^1)</td>
<td>Favors conservative values in a variety of areas;</td>
</tr>
<tr>
<td>8</td>
<td>9(^1)</td>
<td>Is uncomfortable with uncertainty and complexity</td>
</tr>
</tbody>
</table>

Notes: \(^1\)removed due to insufficient item reliability \(^2\)removed due to inconsistent factor loadings at different time-points
IV. Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT

Table 2. Items Most Characteristic of Growth

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>60</td>
<td>Has insight into and understands own needs, motives, behavior;</td>
</tr>
<tr>
<td>9</td>
<td>16</td>
<td>Is introspective; thinks about self; examines own thoughts and feelings.</td>
</tr>
<tr>
<td>9</td>
<td>90</td>
<td>Is concerned with philosophical problems, e.g., religions, values, free will.</td>
</tr>
<tr>
<td>9</td>
<td>96</td>
<td>Values own independence and autonomy</td>
</tr>
<tr>
<td>9</td>
<td>39</td>
<td>Thinks and associates to ideas in unusual ways.</td>
</tr>
<tr>
<td>8</td>
<td>70</td>
<td>Behaves ethically; has a personal value system and is faithful to it.</td>
</tr>
<tr>
<td>8</td>
<td>83</td>
<td>Able to see to the heart of important problems.</td>
</tr>
<tr>
<td>8</td>
<td>71</td>
<td>Has high aspiration level for self; is ambitious; sets high personal goals.</td>
</tr>
<tr>
<td>8</td>
<td>66</td>
<td>Enjoys aesthetic impressions; is aesthetically sensitive.</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>Has a wide range of interests (regardless of how deep or superficial)</td>
</tr>
<tr>
<td>8</td>
<td>51</td>
<td>Places high value on intellectual and cognitive matters (does not ability).</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Is critical, skeptical, not easily impressed.</td>
</tr>
<tr>
<td>8</td>
<td>62</td>
<td>Tends to be rebellious and non-conforming.</td>
</tr>
</tbody>
</table>

Notes: ¹removed due to insufficient item reliability ²removed due to inconsistent factor loadings at different time-points

Independent samples t-tests were carried out to compare differences between males and females and between the two birth cohorts. The only significant difference was for Adjustment, with females scoring higher at middle adulthood ($M=61.23$, $SD=9.53$) than males ($M=57.90$, $SD=9.86$); $t(231)=2.61$, p=.01.
IV. **Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT**

Table 3. *Descriptive Statistics for Adjustment and Growth Scales at Each Time-point*

<table>
<thead>
<tr>
<th>Time-point</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adjustment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult 4</td>
<td>181</td>
<td>65.90</td>
<td>10.26</td>
<td>.88</td>
</tr>
<tr>
<td>Adult 3</td>
<td>240</td>
<td>62.22</td>
<td>10.60</td>
<td>.86</td>
</tr>
<tr>
<td>Adult 2</td>
<td>233</td>
<td>59.73</td>
<td>9.80</td>
<td>.84</td>
</tr>
<tr>
<td>Adult 1</td>
<td>237</td>
<td>54.36</td>
<td>10.31</td>
<td>.82</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>60.55</td>
<td>10.24</td>
<td>.85</td>
</tr>
<tr>
<td><strong>Growth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult 4</td>
<td>181</td>
<td>56.88</td>
<td>7.95</td>
<td>.79</td>
</tr>
<tr>
<td>Adult 3</td>
<td>240</td>
<td>53.30</td>
<td>8.52</td>
<td>.73</td>
</tr>
<tr>
<td>Adult 2</td>
<td>233</td>
<td>55.48</td>
<td>10.34</td>
<td>.83</td>
</tr>
<tr>
<td>Adult 1</td>
<td>237</td>
<td>49.11</td>
<td>9.52</td>
<td>.80</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>53.69</td>
<td>9.08</td>
<td>.79</td>
</tr>
</tbody>
</table>

**Construct Validation in Late Adulthood**

We tested for divergent and convergent validity at the late adulthood time-point, at which other well-validated measures were available. First, we considered simple bivariate correlations between scores on the new Growth and Adjustment scales and existing measures that are conceptually related to growth and adjustment are presented in Table 4. The pattern of correlations was mostly as expected: Adjustment correlated positively and significantly with all adjustment-related measures except Conscientiousness ($r=.17, p=.07$). Growth correlated positively and significantly with all growth-related measures, and, contrary to
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expectations, with two adjustment-related measures: Well-being from Adjustment \((r=.20, p<.05)\), and Life Satisfaction \((r=.24, p<.011)\). Finally, the Growth and Adjustment scales were significantly positively correlated with each other \((r=.23, p<.01)\).

Table 4. Bivariate Correlations Between Q-sort Adjustment and Growth Scale Scores and other indicators of Growth and Adjustment

<table>
<thead>
<tr>
<th>Adjustment</th>
<th>Q-Sort Adjustment</th>
<th>Q-Sort Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conscientiousness</td>
<td>.17</td>
<td>.14</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.33 ***</td>
<td>.15</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-.20 *</td>
<td>-.14</td>
</tr>
<tr>
<td>Well-being from Adjustment</td>
<td>.40 ***</td>
<td>.20 *</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>.35 ***</td>
<td>.24 **</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>-.09</td>
<td>.33 ***</td>
</tr>
<tr>
<td>Well-being from Growth</td>
<td>.09</td>
<td>.34 ***</td>
</tr>
<tr>
<td>Psychological Mindedness</td>
<td>-.03</td>
<td>.47 ***</td>
</tr>
<tr>
<td>Wisdom-related Performance</td>
<td>.07</td>
<td>.48 ***</td>
</tr>
</tbody>
</table>

*Note. * \(p<.05\), ** \(p<.01\), *** \(p<.001\)

To unpack this pattern of relations further, we first constructed latent Growth and Adjustment factors based on extant personality measures in a structural equation modelling framework, using indicators established in previous studies. To maximize fit before adding further regression paths, Openness to Experience was allowed to load negatively onto the latent Adjustment factor\(^4\). To test the convergent and discriminant validity of the Q-sort based Adjustment and Growth scales, we added them to this model, regressing each scale score

\(^4\) Fit was still acceptable without the negative loading on adjustment and the significance of factor loadings and regression weights was the same.
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simultaneously onto the two respective latent factors (see Figure 1). All of the respective adjustment and growth indicators loaded significantly onto their latent factors as expected. Regression paths from latent Adjustment and Growth factors to the Q-sort scale scores were significant ($p<.0001$) with standardized weights of .65 for Adjustment and .66 for Growth, supporting the claim of convergent validity. In line with our expectations about divergent validity, the latent Adjustment factor did not significantly predict Q-sort Growth ($\beta = -.04$, $p = .67$), and the latent growth factor negatively predicted Q-sort Adjustment ($\beta = -.24$, $p = .02$).

![Figure 1](image)

Figure 1. Structural Equation Model Showing Later Life Adjustment and Growth Latent Factors as Predictors of Q-sort Adjustment and Growth Scale Scores.

*Note: *$p<0.05$, **$p<0.01$, ***$p<0.001$.

**Factor Structure of Adjustment and Growth Scales**

During the exploratory factor analyses, we found that one Adjustment item and three further Growth items loaded onto different factors at different time-points, causing substantial
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interference to the establishment of a configural invariance model. Because we were aiming to test the consistency of the configural invariance model over time, we removed these inconsistent items. Therefore, both final scales, Adjustment and Growth, submitted to invariance testing, contained 9 items.

Exploratory factor analyses with oblique rotation carried out using the full sample at each time-point in MPLUS suggested good fit for a model with three factors for Growth and two or three factors for Adjustment. Although a slightly better fit was suggested for models with more factors than these, these included single-item factors and several cross-loadings that affected interpretability. Therefore, we replicated the more parsimonious three-factor solution for Growth and the two-factor solution for Adjustment using CFA at each adult time-point. Fit was acceptable to good for all time-points for Adjustment. For Growth, the fourth, later-life time-point had less satisfactory fit, but we considered it sufficient for the next step in testing. The two-factor Adjustment and three-factor Growth models are detailed in Tables 5 and 6 respectively, including factor loadings at each wave. Factors have been labelled in italics: for Adjustment we labelled the first factor Interpersonal Warmth, indicated by five items that relate to personal relationships, social effectiveness, and an awareness of one’s impact on others’ feelings; and the second factor Dependability, indicated by four items representing personal qualities associated with competent functioning in society. For Growth we labelled the factors Thoughtful, indicated by four items with an emphasis on interest, rather than ability; Transcending the given, indicated by two items relating to independence and aspiration; and Ethics/Insight, indicated by three items relating to ethical behavior and reflectiveness.
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Testing of Longitudinal Measurement Invariance

As described above, we first established configural invariance models by replicating a baseline model at each time-point separately and then simultaneously in a single model. While fit was obtained for Adjustment across all four time-points, there were difficulties in

Table 5. Standardized Item Loadings and Model Fit Indices for Configural Invariance Model of Adjustment, Replicated Separately at Each Adult Time-point

<table>
<thead>
<tr>
<th></th>
<th>Adult 1</th>
<th>Adult 2</th>
<th>Adult 3</th>
<th>Adult 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>237</td>
<td>233</td>
<td>240</td>
<td>181</td>
</tr>
<tr>
<td>df</td>
<td>21</td>
<td>20</td>
<td>18</td>
<td>23</td>
</tr>
</tbody>
</table>

Factor 1

Interpersonal
- Sympathetic: .85*** , .69*** , .90*** , .88***
- Arouses liking: .61*** , .75*** , .77*** , .89***

Warmth
- Protective: .62*** , .63*** , .73*** , .84***
- Warm: .80*** , .58*** , .88*** , .88***
- Aware of impressions: .36*** , .57*** , .44*** , .54***

Factor 2

Dependability
- Clear-cut personality: .45*** , .60*** , .80*** , .61***
- Productive: .51*** , .44*** , .28*** , .50***
- Cheerful: .61*** , .50*** , .62*** , .69***

Factors 1 and 2 correlations
- Factors 1 and 2: .86*** , .95*** , .77*** , .78***

Fit Indices
- CFI: .966 , .966 , .981 , .972
- RMSEA: .075 , .076 , .072 , .078
- SRMR: .04 , .04 , .04 , .04

Note: differences in degrees of freedom reflect differences in the number of residual error terms allowed to covary, as specified by modification indices; ***p<0.001. Adult 1=young adulthood; Adult 2=middle adulthood; Adult 3=late-middle adulthood; Adult 4=late adulthood
### Table 6. Standardized Item Loadings and Model Fit Indices for Configural Invariance Model of Growth, Replicated Separately at Each Adult Time-point

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item Category</th>
<th>Adult 1</th>
<th>Adult 2</th>
<th>Adult 3</th>
<th>Adult 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1</td>
<td>Wide range of interests</td>
<td>.74***</td>
<td>.57***</td>
<td>.60***</td>
<td>.71***</td>
</tr>
<tr>
<td></td>
<td>Introspective</td>
<td>.62***</td>
<td>.37***</td>
<td>.38***</td>
<td>.77***</td>
</tr>
<tr>
<td></td>
<td>Values intellectual matters</td>
<td>.64***</td>
<td>.84***</td>
<td>.69***</td>
<td>.59***</td>
</tr>
<tr>
<td></td>
<td>Philosophically concerned</td>
<td>.56***</td>
<td>.55***</td>
<td>.37***</td>
<td>.72***</td>
</tr>
<tr>
<td>Factor 2</td>
<td>High aspiration for self</td>
<td>.65***</td>
<td>.68***</td>
<td>.63***</td>
<td>.60**</td>
</tr>
<tr>
<td></td>
<td>Values independence</td>
<td>.44***</td>
<td>.73***</td>
<td>.64***</td>
<td>.24*</td>
</tr>
<tr>
<td>Factor 3</td>
<td>Incisive</td>
<td>.69***</td>
<td>.89***</td>
<td>.67***</td>
<td>.63***</td>
</tr>
<tr>
<td></td>
<td>Insightful</td>
<td>.84***</td>
<td>.80***</td>
<td>.79***</td>
<td>.81***</td>
</tr>
<tr>
<td></td>
<td>Ethically consistent</td>
<td>.34**</td>
<td>.47***</td>
<td>.50***</td>
<td>.29***</td>
</tr>
<tr>
<td>Factor</td>
<td>Factors 1 and 2</td>
<td>.76***</td>
<td>.66***</td>
<td>.58***</td>
<td>.58***</td>
</tr>
<tr>
<td></td>
<td>Factors 1 and 3</td>
<td>.77***</td>
<td>.76***</td>
<td>.79***</td>
<td>.93***</td>
</tr>
<tr>
<td></td>
<td>Factors 2 and 3</td>
<td>.39***</td>
<td>.50***</td>
<td>.55***</td>
<td>.39*</td>
</tr>
<tr>
<td>Fit Indices</td>
<td>CFI</td>
<td>.956</td>
<td>.966</td>
<td>.977</td>
<td>.941</td>
</tr>
<tr>
<td></td>
<td>RMSEA</td>
<td>.070</td>
<td>.078</td>
<td>.054</td>
<td>.108*</td>
</tr>
<tr>
<td></td>
<td>SRMR</td>
<td>.047</td>
<td>.041</td>
<td>.042</td>
<td>.062</td>
</tr>
</tbody>
</table>

**Note:** differences in degrees of freedom reflect differences in the number of residual error terms allowed to covary, as specified by modification indices; *p<0.05, ***p<0.001. Adult 1=young adulthood; Adult 2=middle adulthood; Adult 3=late-middle adulthood; Adult 4=late adulthood fitting Growth across all four time-points in a single model (see Analytic Strategy above), so we ran a model for only the first three of four time-points (i.e., from young adulthood to mid-
late adulthood) and confirmed this in a separate model using only the last three time-points (i.e. from middle adulthood to late adulthood). We then subjected each model to increasing levels of constraint to determine the maximum possible level of longitudinal invariance. Model fit indices for the invariance tests for the configural invariance model for Adjustment and the two Growth models are presented in Table 7. The configural invariance model for Adjustment demonstrated acceptable to good fit $\chi^2 (504)=840.06, p<0.001; \text{CFI}=.920, \text{RMSEA}=.047, \text{SRMR}=.07$. The configural invariance model for Growth at the first three time-points also showed acceptable to good fit $\chi^2 (255)=419.68, p<0.001; \text{CFI}=.929, \text{RMSEA}=.046, \text{SRMR}=.07$, as did the model for Growth at the last three time-points $\chi^2 (248)=434.02, p<0.001; \text{CFI}=.922, \text{RMSEA}=.052, \text{SRMR}=.08$.

We therefore proceeded to test metric invariance with factor loadings constrained to be equal across all 4 time-points in the case of Adjustment, and across 3 time-points for each of the Growth models. In all cases, the reduction in CFI was greater than the cutoff of 0.01, while the increase in RMSEA was equal to or above the cutoff point of 0.005. Taken together, these changes in model fit indicated that full metric invariance could not be sustained for either the Adjustment or the Growth models. After consulting modification indices, we relaxed constraints on factor loadings one at a time to establish a minimum level of partial metric invariance. In the case of Adjustment, constraints were removed from *Arouses liking in others* and *Is productive* at young adulthood, and *Is dependable* at late adulthood to achieve acceptable fit $\chi^2 (528)=903.84, p<0.001; \text{CFI}=.911, \text{RMSEA}=.049, \text{SRMR}=.08$. For Growth across the first three time-points, constraints were removed from *Introspective* at young adulthood, and *Incisive* at middle adulthood, resulting in acceptable to good fit $\chi^2 (273)= 451.85, p<0.001; \text{CFI}=.922, \text{RMSEA}=.047, \text{SRMR}=.08$. For Growth across the last three time-points, we lifted equality constraints from ‘*Values intellectual matters*’ and
IV. Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT

Table 7. Model Fit Indices for the Measurement Invariance Models

<table>
<thead>
<tr>
<th>Invariance Model</th>
<th>χ² (df)</th>
<th>Δ χ² (Δ df)</th>
<th>CFI</th>
<th>ΔCFI</th>
<th>RMSEA</th>
<th>ΔRMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>Configural</td>
<td>840.06 (504)</td>
<td></td>
<td>.920</td>
<td>.047</td>
<td></td>
<td>.07</td>
</tr>
<tr>
<td>Young adulthood to</td>
<td>Metric¹</td>
<td>1006.39 (531)</td>
<td>166.33 (27)</td>
<td>.887</td>
<td>.033</td>
<td>.055</td>
<td>.008</td>
</tr>
<tr>
<td>later life</td>
<td>Partial metric¹</td>
<td>903.84 (528)</td>
<td>63.78 (24)</td>
<td>.911</td>
<td>.009</td>
<td>.049</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>Partial scalar²</td>
<td>960.39 (542)</td>
<td>56.55 (14)</td>
<td>.901</td>
<td>.010</td>
<td>.051</td>
<td>.002</td>
</tr>
<tr>
<td>Growth</td>
<td>Configural</td>
<td>419.68 (255)</td>
<td></td>
<td>.929</td>
<td>.046</td>
<td></td>
<td>.07</td>
</tr>
<tr>
<td>Young adulthood to</td>
<td>Metric¹</td>
<td>483.437 (273)</td>
<td></td>
<td>.909</td>
<td>.020</td>
<td>.051</td>
<td>.005</td>
</tr>
<tr>
<td>mid-late adulthood</td>
<td>Partial metric¹</td>
<td>451.85 (271)</td>
<td>32.17 (16)</td>
<td>.922</td>
<td>.007</td>
<td>.047</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Partial scalar²</td>
<td>480.82 (276)</td>
<td>28.97 (5)</td>
<td>.912</td>
<td>.01</td>
<td>.050</td>
<td>.003</td>
</tr>
<tr>
<td>Growth</td>
<td>Configural</td>
<td>434.02 (248)</td>
<td></td>
<td>.922</td>
<td>.052</td>
<td></td>
<td>.08</td>
</tr>
<tr>
<td>Middle adulthood to</td>
<td>Metric¹</td>
<td>574.62 (266)</td>
<td>140.60 (18)</td>
<td>.870</td>
<td>.052</td>
<td>.065</td>
<td>.013</td>
</tr>
<tr>
<td>later life</td>
<td>Partial metric¹</td>
<td>457.18 (261)</td>
<td>23.16 (13)</td>
<td>.918</td>
<td>.004</td>
<td>.052</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Partial scalar²</td>
<td>474.11 (267)</td>
<td>16.93 (16)</td>
<td>.913</td>
<td>.005</td>
<td>.053</td>
<td>.001</td>
</tr>
</tbody>
</table>

Note: ¹=Compared with configural invariance model; ²=compared with partial metric invariance model
IV. Q-SORT SCALES FOR PERSONALITY GROWTH AND ADJUSTMENT

‘Able to see to the heart of important problems’ (incisive) at middle adulthood, and from ‘Is introspective’, ‘Values own independence and autonomy’ and ‘has insight’ at late adulthood to achieve acceptable fit $\chi^2 (261)=457.18$, $p<0.001$; $\text{CFI}=.918$, $\text{RMSEA}=.052$, $\text{SRMR}=.09$. Thus, from young adulthood to mid-late adulthood and from middle adulthood to late adulthood, we demonstrated partial metric invariance for these models. This applied for both Growth and Adjustment and constraints were relaxed for a maximum of one item per factor per time-point.

In a final step, we tested for partial scalar invariance by retaining the same constraints on factor loadings and additionally constraining item intercepts to equality, then relaxing constraints on intercepts according to modification indices until fit indices reflected an acceptable decrease in fit from the partial metric invariance models. Although acceptable fit was achieved following this procedure for both Growth and Adjustment, in the case of Adjustment, no item intercepts were constrained across all time-points; three intercepts could be constrained to equality across at least three time-points: Protective, Productive, and Dependable; and all others across at least two time-points. For Growth in the first three time-points, only Places high value on intellectual and cognitive matters could be constrained across all three time-points, and all others could be constrained to equality at two time-points, except Behaves ethically. For the final three time-points, intercepts for Has a wide range of interests could be constrained across all time-points, while only four other item intercepts could be constrained across at least two time-points. With inconsistency regarding at which time-points intercepts could be held equal with each other, we concluded that there was insufficient evidence to claim partial scalar invariance and no stricter testing was carried out.
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Discussion

In this paper, we constructed new measures for personality adjustment and growth from Q-sort data, and established convergent and divergent validity for the new scales using a structural equation modelling framework to test associations with extant personality measures. We then established a factor structure that was similar across four time-points for each scale and established partial metric invariance for both scales.

Establishing New Prototypes of Personality Adjustment and Growth

We hypothesized that it would be possible to establish sufficient agreement among expert raters to create a scale based on Q-sort ratings for prototypes of personality growth and adjustment. Indeed, we found that there was strong agreement among experts as to what constitutes a prototype of personality adjustment and of personality growth. In the subsequent psychometric optimization of the scales, we removed one Growth item and three Adjustment items. The resulting scales, Adjustment (10 items) and Growth (12 items), had good internal consistency at each of the four time-points.

Convergent and Discriminant Validity of the New Scales in Late Life

As explained above, appropriate external criteria against which to judge the new scales were only available at the late adulthood, and included one performance measure and several self-report measures. We considered bivariate correlations between the new scales and existing measures and then used a structural equation modelling approach to test for construct validity.

In terms of bivariate associations, we expected Adjustment to correlate positively with Agreeableness, Conscientiousness and Well-being from Adjustment, and negatively with Neuroticism; and Growth to correlate positively with Openness to Experience,
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Psychological Mindedness and Well-being from Growth. At late adulthood time-point, bivariate correlations between the new scales and existing measures gave a strong first indication of validity.

Adjustment correlated significantly positively with all but one of the expected measures. The lack of association with Conscientiousness may have a number of possible explanations: firstly, the new scale may not successfully incorporate the trait of conscientiousness; secondly, the new scale was based on observer ratings while the Big Five measure is based on self-report, which may affect conscientiousness more than other traits (see Jackson et al., 2009); and thirdly, conscientiousness in later life may have a different role in adjustment from that of earlier phases in life. Indeed, all three possibilities may be at play simultaneously: For example, an earlier Q-sort measure of conscientiousness (Wink, Ciciolla, Dillon, & Tracy, 2007) contained several items that were not selected for our Adjustment scale, and some of these might have been selected had we asked experts to carry out their sorts with an older adult in mind. Despite this, as expected in terms of discriminant validity, Adjustment scores did not significantly correlate with any of the measures we designated as conceptually related to growth, suggesting that overall the scale is a valid, if possibly incomplete, measure of adjustment in later life.

Similarly, the new Growth scale correlated positively with all expected measures. The only area for concern was in terms of divergent validity for this scale, as it was positively associated with two adjustment-related constructs, Life Satisfaction and Well-being from Adjustment. Whether these relationships are an artifact of the Q-sort method from which scores were obtained, or are due to the relationship between Growth and Adjustment, was not clear. On one hand, because Adjustment items are normatively more common in the Q-sort profiles of participants, particularly at the old age time-point, these correlations may suggest
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that some Adjustment items are more resistant to displacement by other items, such that even among those with high levels of Growth, items relating to well-being retain high positions in the profile. On the other hand, it may be the case, as hypothesized elsewhere, that these associations represent the stable foundation of adjustment necessary for growth to manifest at later life (see Staudinger & Kunzmann, 2005; Wink & Staudinger, 2016).

As a further test of convergent and divergent validity, we created latent Growth and Adjustment factors from the available, established indicators, and added our new scale scores to the model as endogenous variables, expecting each scale to predict the respective latent factor. The SEM approach to establishing construct validity ran as expected: scores on the Q-sort scales for Adjustment and Growth were significantly predicted by corresponding latent Adjustment and Growth factors. This suggests that although some bivariate relationships were strictly as expected, the overall pattern of associations between latent Growth and Adjustment and their new scales provides evidence for convergent and divergent validity.

We demonstrated divergent validity on the basis of the Growth and Adjustment factors not significantly cross-loading positively onto the other latent construct. The small, negative relationship between latent Growth and the new Adjustment scale was not expected, and could be a methodological artifact or a feature specific to late adulthood. The latter seems unlikely since our expectation was based on a positive relationship between latent factors found previously in the same sample (Wink & Staudinger, 2016). The most likely interpretation is that some of our Adjustment items are not compatible with high levels of Growth in later life and are therefore easily displaced in the forced distribution Q-sort profiles, while others, as suggested above, are more resistant to displacement. The differential compatibility of facets of adjustment and growth is something that could be investigated further in future. These considerations do not detract from the overall conclusion that the new
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Growth scale is a valid measure of growth, and the new Adjustment scale is a valid measure of adjustment.

The factor structure of Growth and Adjustment. We had not hypothesized a multidimensional structure but found that both scales were better represented in latent space as having several dimensions each. We proposed tentative labels for each of these subfactors.

Adjustment. The first factor we identified contained items that relate to interpersonal relations and social effectiveness. As such, we labelled it as Interpersonal warmth and would surmise that this factor is closely related to agreeableness and social maturity (e.g., Helson & Wink, 1987), based on successful relations with other people. The second Adjustment factor represents personal qualities associated with competent functioning in society, and for this we used the label Dependability, likely similar to the personality trait of conscientiousness, but with the additional component of cheerfulness. Cheerfulness has previously been linked with self-confidence (Haan, Millsap, & Hartka, 1986) and its position in this factor probably reflects a disposition towards satisfaction that is intrapersonal rather than interpersonal, perhaps similar to self-esteem. Our Adjustment scale therefore assesses socially valued personal and interpersonal qualities that have previously been associated with adjustment (e.g., Helson & Srivastava, 2001).

Growth. Again, the face validity of the factors was encouraging. The first Growth factor contains cognitive elements but with an emphasis on interest rather than ability and we have labelled it Thoughtfulness. This likely taps into open-minded, intellectual and exploratory aspects of growth that, we would expect, play a large role in the cognitive aspect of wisdom, such as in terms of psychological mindedness, openness to experience and intelligence (cf., Staudinger, Lopez, & Baltes, 1997). The second factor contains items indicating aspiration and independence for the self and we have labelled it Transcending the
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given. On one hand, this may be related to autonomous self-development in the manner of self-transcendence (see Levenson et al., 2005), and on the other, it may capture a motivational side of growth that is more associated with self-determination (Deci & Ryan, 1991). The third Growth factor represents both tendency and ability to reflect internally on ethical and personal matters and we have labelled it as Ethics/Insight. It seems that what distinguishes this factor from the first, Thoughtfulness, is the type of cognitive activity, rather than frequency of and interest in thoughts. It implies high levels of reasoning, both logical and moral, and may be related to the characteristics at the interface of personality and intelligence previously shown to be strongly related to wisdom-related performance (Staudinger et al., 1997; Staudinger & Pasupathi, 2003). To the extent that it concerns both insight and ethical behavior, this third factor may represent practical reasoning and concerns with living well, as opposed to the more theoretical reasoning of the first factor, perhaps an analogue for the distinction between phronesis and sophia as practical wisdom and transcendent knowledge respectively (see Trowbridge, 2011).

Longitudinal Measurement Invariance

In order for the two new scales to be appropriate tools for investigating adult personality development we needed to show that they actually measure the same construct across the adult life-span. To that end, we tested the invariance of the two-factor structure for Adjustment across all four adult time-points, from young adulthood to later adulthood, and the three-factor structure for Growth across the first three time-points to mid-late adulthood and then repeated the process for middle adulthood to later life. We expected to find some level of invariance across time for the new measures and indeed established partial metric invariance for each of the scales with a maximum of only one invariant item per factor per time-point, which implies that, in the majority, the meanings of the items were the same
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across measurement occasions and therefore meaningful comparisons can be made.
Alterations may need to be made in future for non-invariant items, which could include
removing them, or instead focusing on comparisons of means for latent variables (Maitland,
Dixon, Hultsch, & Hertzog, 2001), or optimizing scales for use at specific time-point. We
were unable to establish scalar invariance, which suggests that differences in individual items
over time are not due only to differences in latent factors, and there may be systematic
reasons for differences in scores over time. This is particularly interesting given the ipsative
nature of the data. We might conclude that certain items are relatively more likely to receive
high ratings at different time-points according to their relevance to the stage of life, not just to
the individual. For example, Values independence has higher mean scores among adults in
late adulthood, and a high score may represent a normative increase in the salience of
independence at a time when independence is frequently challenged.

Limitations and future directions

Criticisms typically made in research using the IHD data include the geographical,
ethnic and socioeconomic homogeneity of participants. In addition, the final wave of data
collection was nearly 20 years ago, and we may question whether the passage of time affects
the relevance of these results. However, as noted in Wink and Staudinger (2016), findings
from participants in the final adult wave of the IHD dataset are similar to those from German
adults taken earlier (e.g., Staudinger et al., 1997) The sample of adults who participated in the
study is unfortunately rather small for modern statistical analysis, but still represents a rare
opportunity to test longitudinal hypotheses and comparable work should now be carried out
in larger samples. We contend that for the purposes of the present investigation, none of these
limitations need cause concern: our aim was to construct and validate new measures in this
sample, and as such, use is likely to be limited to this sample pending further scale

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development and validation outside this sample. As discussed above, use of the full scale is not advised without caution, because only partial measurement invariance could be established. However, the consistency of the models across adulthood certainly offers the possibility of measuring growth and adjustment using the 18 items we selected in this study.

Both growth and adjustment are constructs that are characterized in part by changes in their indicators over time, and further research should investigate these changes, for example using latent growth curve analysis. In addition, it is extremely important to consider interindividual and intraindividual differences over time, as we would expect that neither trajectory is uniform, but rather that mean differences are affected by large changes in some individuals. In addition, although we have demonstrated partial metric invariance for the scales, there is also substantial evidence that the constructs themselves involve different patterns of relations at different time-points. Further investigation of differences in the ways that adjustment and growth manifest at different points in the lifespan may be highly informative.

Conclusions and Outlook

Overall, we have offered further evidence for the validity of a distinction between two forms of positive personality development in adulthood, adjustment and growth. We have created new and scales for these constructs and demonstrated the construct validity of the new measures using a CFA in the final wave. We established partial measurement invariance for models representing these structures across all four time-points in one model for Adjustment, and in two overlapping models for Growth. We are therefore encouraged to develop further understanding of the changes in growth and adjustment through adulthood: we have identified a scale that is viable throughout adulthood which may need to be optimized at different life stages. We contend that the findings in this paper provide a sound
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foundation to test longitudinal hypotheses regarding the functioning of growth and
adjustment throughout the lifespan.

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early stages of analysis.
V. TRANSITIONAL CHAPTER TO STUDY 2

Study 1 has provided evidence that Personality Adjustment and Growth are distinct constructs throughout adulthood that are measurable using a prototype Q-sort approach. With the establishment of convergent and divergent validity for the unique scales created, it now becomes possible to trace the trajectories of these constructs across adulthood and to test longitudinal propositions regarding the development of wisdom. In this way, Study 1 is the springboard to achieving the primary aim of testing the longitudinal associations between personality growth and wisdom in later life. Study 2 is the first ever longitudinal study using direct measures of these constructs, and does so across approximately 40 years from young adulthood to later life, making it easily the longest spanning investigation of antecedents of general wisdom. There is a recent addition to the wisdom and personality development that offers tests a conceptually similar argument that growth-related constructs will predict later life wisdom (Ardelt, et al., 2018), but this used only a proxy measure of openness to experience as an indicator of growth, and a self-report measure of wisdom. Despite those methodological differences, their finding that personality growth predicted later life wisdom encourages the more thorough approach taken in our Study 2.

We obtained mean scores at all adult waves in the IHD data for Adjustment and Growth in Study 1 and observed that at the mean-level, both increased over time. However, it has been argued for some time that developmental psychology needs to focus on looking not only at changes in mean levels, but also similarities in intraindividual change, and this ideally in a multivariate context (see Nesselroade, 1991; Nesselroade & Molenaar, 2010). Latent class growth analysis is one technique of identifying relatively homogeneous groups who change similarly, avoiding the oversimplifications made possible by identifying only a single, average trajectory (Jung & Wickrama, 2008). The question addressed in Study 2 therefore is whether there is variability in the pattern of intraindividual change observed in Study 1 that
predicts wisdom in later life, which we address by asking whether there are indeed subgroups of the Institute of Human Development sample who change in relatively similar ways in terms of levels of adjustment and growth. By entering growth and adjustment both into the model simultaneously as parallel processes, we created a multivariate context that will give a more complete picture of the relationships, albeit one that somewhat tests the limits of a fairly small sample for this kind of analysis.

Study 1 also showed that the new scales were associated in later life with adjustment and growth as expected, with a clear positive relationship between the new Growth scale and a latent growth factor indicated by several theoretically related constructs. The latent growth framework offered two important ways in which we could address the overall second aim of the dissertation: to test not only cross-sectional, but also longitudinal associations between growth, adjustment and wisdom. Taking advantage of the temporal separation between measurement occasions to include late adulthood wisdom-related performance as a distal outcome of a three-wave trajectory covering young adulthood to mid-late adulthood, Study 2 is the first examination of the longitudinal relationship between types of positive personality development using unique Personality Adjustment and Growth measures and a performance measure of later life wisdom.
VI. STUDY 2: PERSONALITY DEVELOPMENT PREDICTS WISDOM IN OLD AGE

Personality development predicts wisdom in old age:
Latent classes of growth and adjustment through adulthood

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Abstract

Adjustment and growth, two distinct forms of positive personality development, have been established and validated cross-sectionally. We aimed to identify trajectories of positive personality development across adulthood and test longitudinal associations with wisdom in late adulthood. With previously validated scales measuring Personality Adjustment and Personality Growth in a sample of 203 participants from the Institute of Human Development’s longitudinal dataset, we used latent growth curve analysis to identify average trajectories from young adulthood to late middle adulthood (approx. age 34, 45, and 57 years). We then tested the predictive power of those trajectories toward wisdom-related performance (WRP) in late adulthood (approx. age 73 years) by including WRP as a distal outcome in the model. Thirdly, we used latent class growth analysis to identify classes of participants with relatively homogeneous change trajectories towards late adulthood WRP. Adjustment showed a linear, steadily increasing trajectory, while the Growth trajectory was nonlinear, with a peak in middle adulthood, and the Growth intercept at young adulthood predicted late adulthood WRP. Our latent class growth analysis resulted in a three group solution. A group with high initial values of Growth and a steady increase in Adjustment across adulthood had a significantly higher mean WRP when compared with a group who had high initial Adjustment and a steady increase in Growth. These results provide the first longitudinal evidence for an ontogenetic model of wisdom and suggest that positive personality development even by young adulthood is important for the development of wisdom in later life.

Keywords: growth, adjustment, wisdom, personality, longitudinal
Patterns of stability and change in adult personality have often been linked with later life outcomes, including well-being and healthy aging (Friedman, Kern, & Reynolds, 2010; Harris, Brett, Johnson, & Deary, 2016; Roberts, Walton, & Bogg, 2005) as well as psychological health (Jones, Livson, & Peskin, 2006). Longitudinal studies in these areas have tended to focus on just one branch of positive personality development, treating subjective well-being and signs of social competence as favorable long-term outcomes, with personality traits such as conscientiousness and emotional stability typically contributing most to this type of successful aging (Soto, 2015). While this is in line with the ‘maturity principle’ (Roberts, Caspi, & Moffitt, 2001), such trajectories capture the most frequently observed pathway of positive personal development (Staudinger & Kunzmann, 2005) and may not represent personality maturation in the sense of growth. Apart from subjective well-being, when wisdom-related performance is included as another ideal endpoint of development, it becomes apparent that there is another, less frequent pathway of positive development designated as personality growth. Personality growth in this sense depends on reasoning-related insight and openness to experience, both of which usually show age-related declines in the course of adulthood, and later results in elevated levels of wisdom (Staudinger & Kessler, 2001; Staudinger & Kunzmann, 2005). This personality maturation toward growth has shown strong cross-sectional relations with wisdom-related performance in adolescence and in later life (Law, Staudinger, & Wink, 2018b; Wink & Staudinger, 2016). Whether these relations hold when using longitudinal data has not yet been tested. However, some longitudinal research on related constructs, the Personal Growth and Environmental Mastery dimensions of Ryff’s (1989) Psychological Well-being (PWB) Scale, supports the expectation that there is a longitudinal relationship between personality growth and wisdom (Helson & Srivastava, 2001). In this study, we first aimed to examine trajectories of the two forms of positive personality development, adjustment and growth, in a longitudinal dataset.
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spanning approximately 40 years of adulthood. With latent growth factors identified, we then aimed to test their predictive pattern with respect to wisdom-related performance measured at the final time-point (approximate mean age 73). We then aimed to identify latent classes of people encompassing both types of positive personality development, allowing class membership to be affected by the distal outcome of wisdom-related performance.

Personality Maturation Toward Adjustment and Toward Growth: Two Distinct Trajectories of Positive Development

There is substantial evidence that the Big Five personality traits (Costa & McCrae, 1992) are not stable over the lifespan but, rather, change in predictable ways at the mean-level. Following the maturity principle (Roberts et al., 2001), the reverse pole of neuroticism, emotional stability, along with conscientiousness and agreeableness, tends to increase over time, while openness to experience shows sharp increases from early adolescence to early adulthood before declining, and while the dominance facet of extraversion increases over time, vitality decreases (Roberts, Walton, & Viechtbauer, 2006). The maturity principle therefore represents changes only in some aspects of personality, those which contribute to the accrual and maintenance of subjective well-being (Staudinger & Kunzmann, 2005), which in turn results in reciprocal increases in the same personality traits over time (Soto, 2015). Beyond subjective well-being, this kind of development, which has been labelled adjustment, is associated with a sense of well-being from active participation in and mastery of one’s environment (Environmental Mastery), feelings of warmth and connectedness with others (Positive Relations with Others), and positive awareness of one’s strengths and weaknesses (Self-Acceptance), as reflected in three dimensions of Carol Ryff’s Psychological Well-being (PWB) scale (Ryff, 1989). Adjustment therefore reflects not only intrapersonal change toward a stable sense of well-being, but also a high degree of adherence to implicit and explicit social norms, such as in the completion of age-graded developmental tasks.
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(Havighurst, 1972), for example, commitment to a vocational role and the achievement of a sense of personal identity (Marcia, 1966). This notion of adjustment has been found to be associated with life satisfaction (Law et al., 2018b; Wink & Staudinger, 2016). Adjustment can generally be considered positive, inasmuch as an individual can readily adopt roles and conform to the prescriptions of family and society. However, high levels of adjustment can represent not mental health, but uncritical adaptation: it is in this sense that Fromm referred to adjustment as the most universal neurosis (Fromm, 1994a). Therefore, while adjustment can be adaptive, for wisdom to manifest in later life, we would expect some level of adjustment to be necessary but not sufficient, and possibly at higher levels, to even be prohibitive of wisdom.

Previously, we created and validated Growth and Adjustment scales to measure growth and adjustment at each of the four adult time-points encompassed in the Institute of Human Development (IHD) longitudinal dataset containing Q-sort data from participants born in the 1920s in the San Francisco Bay Area (Law, Wink, & Staudinger, 2018a). To our knowledge, these scales represent the only measures of growth and adjustment. They show significant positive associations with associated constructs such as Ryff’s (1989) dimensions and with the performance measure of wisdom mentioned above. It has therefore been established with our scales and with latent factors that there is a strong positive relationship between growth and wisdom in later life. In this paper, we use the measures created (Law et al. 2018a) to describe the trajectories of growth and adjustment over 40 years and to test their role in the development of wisdom.

How Does Wisdom Develop?

Wisdom is a theme of discussion and wide-ranging conceptualization across many disciplines. Within psychology, there is a distinction between self-report and performance-based approaches to wisdom. In the current study, we used the dominant paradigm for
VI. PERSONALITY DEVELOPMENT PREDICTS WISDOM IN OLD AGE

measuring wisdom-related performance since the 1990s, the Berlin Wisdom Paradigm. It
defines wisdom as expert insight and judgment in regard to the fundamental pragmatics of
life, and it codes interview protocols to obtain wisdom-related performance (WRP) scores
(Baltes & Staudinger, 2000; Staudinger, Smith, & Baltes, 1992). The ontogenetic model of
wisdom that was proposed by researchers in the Berlin group (see Staudinger & Baltes, 1994;
Baltes & Staudinger, 2000) suggests a range of experiential, motivational, and personality
characteristics that contribute to the development of wisdom by the time individuals reach
their later years. These include work and mentoring experiences linked with difficult life
problems, and facilitative historical periods that are enriched with moral conflicts or other
hardships. There is cross-sectional support for the relevance of these variables (Baltes,
Staudinger, Maercker, & Smith, 1995; Staudinger et al., 1992; Staudinger, Maciel, Smith, &
Baltes, 1998). In addition, cross-sectional studies investigating the psychometric location of
wisdom show that personality traits, openness to experience in particular, have a strong
association with wisdom, even in adolescence. Low and/or non-significant relations with
emotional balance or conscientiousness suggest that these typical markers of maturity (cf. the
‘maturity principle’ above) have less of a role, certainly in studies using performance
measures of wisdom. Studies using self-report measures tend to find a different pattern of
results. They tend to over-emphasize the importance of emotional balance at the expense of
affective complexity (see Labouvie-Vief & Medler, 2002), a distinction that has implications
for what we should expect in terms of whether wisdom develops as a typical or atypical
phenomenon and how that should relate to typical changes in personality.

Studies using the performance-based approach to measuring wisdom have found no
relationship between age and WRP: older is not wiser (Staudinger, 1999), but the same
appears to not be true for adolescents. Adolescence is a period with marked increases in a
number of areas of personality and cognitive functioning, including increasing openness to
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experience (Soto, John, Gosling, & Potter, 2008), perspective-taking (Van der Graaff et al., 2014), and moral reasoning (Colby et al., 1983). Wisdom-related performance also showed age-graded increase in a cross-sectional study (Pasupathi, Staudinger, & Baltes, 2001). As work on emerging adulthood indicates, it is not clear exactly when adolescence-relevant developmental processes should be considered complete (Arnett, 2000). But as far as wisdom goes, mean levels of wisdom-related performance appear to increase with age during adolescence and then level off in very early adulthood. Thus, the extended adolescence described by emergent adulthood may be a crucial period for the later development of wisdom. Yet, we have only a limited understanding of how development up to young adulthood influences later development. Previous research shows that there is a positive concurrent association between growth and WRP, but it is not clear whether such a relationship holds over time: it is also the case that higher levels of wisdom are not attained until after young adulthood (see Pasupathi et al., 2001). We expect therefore, that by young adulthood, although optimal personality development may not manifest as wisdom, there should already be discernible differences between individuals that are predictive of differences in later-life wisdom. In this sense, high levels of growth do not represent an analogue of wisdom, but act as a measurable indicator of the potential for wisdom.

As shown in numerous Berlin paradigm studies, insight, and skills in life review and self-reflection represented by high levels of growth, are necessary for high levels of wisdom-related performance (Baltes & Staudinger, 2000). Individuals who are following a growth trajectory are increasing in affect complexity (Labouvie-Vief & Medler, 2002), experiencing positive and negative emotions, continually questioning the given norms, and are motivated to transcend the social structures that others adjust to. As mentioned above, openness to experience is a core component of growth, representing a person’s interest in seeking new and challenging experiences on which to reflect. The California Psychological Inventory
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(Gough & Bradley, 1996/2002) scale of Psychological Mindedness is an indicator of the reflective tendencies associated with growth, as are unconventional thinking, and high self-aspiration (Wink & Helson, 1997), all of which allow for transcendence of social expectations. Ryff’s PWB (1989) dimensions of Autonomy, Personal Growth, and Purpose in Life have also been associated with growth and, in turn, with wisdom-related performance (Law, Staudinger, & Zacher, 2018; Law et al., 2018b).

Longitudinal investigations have been carried out using similar concepts. For example, Helson and Srivastava (2001) identified four classes of people in their longitudinal sample, labelling them Conservers, Seekers, Achievers, and the Depleted, according to their scores at age 60 on Ryff’s Environmental Mastery and Personal Growth scales, and they found different patterns of development for each group. Conservers, high on Environmental Mastery and low on Personal Growth, were characterized as higher in interpersonal adjustment, while Seekers, low on Environmental Mastery and high on Personal Growth, were higher in wisdom and ego development. Achievers, high on both Ryff scales, were higher in generativity, while the Depleted were low in both and showed low scores across all outcomes. In addition, scores on a composite measure of openness at age 21 were found to be predictive of scores on Personal Growth age 60, again suggesting an important role for openness to experience and ideas for the development of growth-related outcomes in later life. Similar classes were identified among women by Josselson (1996), with Guardians, Searchers, Pathmakers and Drifters mapping approximately onto Helson and Srivastava’s classes (2001) in the order above. The distinguishing characteristic in this study was the women’s approach to identity development, a process revisited by Luyckx, Schwartz, and Goossens (2008). They used latent class growth analysis to identify developmental trajectory classes for both identity and adjustment (defined as a lack of depressive symptoms and the presence of self-esteem). Luyckx et al. (2008) found support for distinct Pathmaker,
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Guardian, and Searcher classes, with a Consolidator group that was a subclass of Guardians who were highly adjusted but low in identity exploration. They found support for Arnett’s (Arnett, 2000) proposition that identity searching without forming commitments might be a path to personal growth for emerging adults, but noted that a subgroup of their Searchers was at high risk of maladjustment. Similarly, we expect that this tendency to explore rather than form role commitments is a characteristic of growth, making high levels of growth in themselves quite challenging. Given the expectation of settled commitments in adulthood, maintaining openness to new experiences may be difficult even as it may well be vital to the later expression of wisdom.

The Present Study

Our study is unique among longitudinal studies because of the rigorous validation history of the Berlin paradigm measure of wisdom in later life, the use of longitudinal predictors which have not been previously identified, and the use of Growth and Adjustment scales that have undergone tests for measurement invariance at four adult time-points. The words adjustment and growth imply change over time and the present investigation explores the nature of this change. While adjustment, given the clear pattern of normative increase of its indicators, can be expected to increase steadily over time, the trajectory of growth and its additional relationship with wisdom is not as clear. First, we took an exploratory approach to modeling change over time along the dimensions of growth and adjustment using latent growth curve modeling of Growth and Adjustment scores from three time-points, starting at young adulthood through middle adulthood to mid-late adulthood, with a measure of wisdom-related performance from a fourth, late adulthood adult time-point as a distal outcome. Although our modelling approach to establish baseline trajectories is exploratory, we expected a steadily increasing trajectory for the Adjustment and a disrupted, non-linear
trajectory for Growth, as suggested previously in our tests of longitudinal invariance (Law et al., 2018a).

Secondly, we aimed to test for relationships between latent growth factors (i.e. intercept and slope) and later life WRP by adding the latter to the latent growth curve model as a distal outcome. We expected a significant positive relationship between our distal WRP measure and the chronologically earlier Growth measure, but only a small relationship with Adjustment, if any.

We then tested for the presence of latent growth classes that differ in terms of initial levels and/or slopes of Growth and Adjustment and/or levels of WRP. Our approach to this was exploratory, following the procedure outlined by Jung and Wickrama (2008), with no expectations regarding the number of classes.

We had one expectation for our fourth aim, however, which was to test for differences between classes in mean WRP at late adulthood, thereby extending the chronological coverage of the LCGA model to almost 40 years. Although our most basic contention is that levels of Growth should be predictive of later life wisdom if supported by some level of Adjustment, the LCGA approach could expose other paths. The choice to include WRP as a distal outcome in the LCGA model rather than using a post-hoc approach was made with the expectation that, given that levels of Growth should affect later life WRP, including the distal outcome would sharpen distinctions between groups, lending further validity to class composition. We thus expected in line with Helson and Srivastava’s (2001) Seeker class, that we would find one class distinctively higher in later life WRP and also showing higher levels of Growth in young adulthood.
Method

Participants

The data used in this study come from the Institute of Human Development’s longitudinal dataset that includes data from two separate studies started in the 1920s. The Berkeley Guidance (BGS) and Oakland Growth (OGS) studies were established in the San Francisco Bay Area beginning in 1928/29. The BGS are a community sample of children born in Berkeley who were assigned to a guidance or a control group by researchers interested in the prospective effect of parents receiving advice about raising their children. Children from both groups were studied in detail using a wide range of medical and psychological instruments. Oakland Growth participants were born in 1920-21 and were recruited at entry to high school at approximately 12 years old for a study on adolescence. Although the study members were relatively affluent, with parents educated to a higher level than the national average, they were approximately representative for the area at the time (Eichorn, 1981). In the 1960s, Jack Block and colleagues merged the two studies, effectively creating two separate cohorts in an ongoing study, although studies of personality development have usually combined them (Helson, Kwan, John, & Jones, 2002).

For the present study, we used data from four adult measurement occasions: early adulthood (age 30s), middle adulthood (age 40s), late-middle adulthood (age 50s or early 60s), and late adulthood (age late 60s or mid-70s). Not all participants provided data for every measurement occasion and to minimize the effects of missing data, we included only participants for whom we had data from at least two of the first three adult time-points. This resulted in a sample of 203 participants of whom 108 were female (53%) and 95 male (47%). Previous studies have shown that there are negligible differences on key variables between those who were unavailable or refused to participate (e.g., Wink & Staudinger, 2016), with
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slightly lower IQ and psychological health (Jones & Peskin, 2010) and lower levels of education (Clausen, 1995; Wink & Dillon, 2002) among those who have more missing data.

Measures

Adjustment and Growth. We measured the two constructs using Adjustment and Growth scales previously created and validated (Law et al., 2018a) that were formed from Q-sort data. When the IHD merged its studies, a decision was made to standardize the information gathered from a broad array of measures by asking experts to carry out a Q-sort based on all available information for each case retrospectively (Block & Haan, 1971). The California Q-sort was used to construct profiles for each participant at each time-point when the datasets were brought together; fuller details of this are available in Block and Haan (1971). Previous research has followed an established technique using the Q-sort items to create new variables representing psychological constructs of interest. Some have created prototypes against which participants can be compared (e.g., Livson & Peskin, 1967; Mallory, 1989), while others have created summative scales based on the most characteristic Q-sort items (e.g., Peterson & Klohn, 1995; Wink, 1991; Wink, Ciciolla, Dillon, & Tracy, 2007).

For the purposes of this study, we used the Growth and Adjustment scales created from prototypes based on mean ratings from 7 experts in the use of the Q-Sort and/or personality and aging (Law et al., 2018a). Scales for each construct were created from the 13 items placed in the highest two positions for each prototype when averaged across raters. Items representative of growth included “has insight into and understands own behavior,” “is concerned with philosophical problems,” and “has a wide range of interests.” Items representative of adjustment included “is productive, gets things done,” “has warmth,” “has the capacity for close relationships,” and “is compassionate.”
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As described in more detail in Law, Wink, and Staudinger (2018a), some items were subsequently removed from the preliminary 13-item scales to increase scale reliability or to increase model fit across the adult time-points. The final scales consisted of 9 items for each construct. Reliability coefficients for the final version of the scales at each time-point ranged from $\alpha=.76$ to $\alpha=.88$ with an average of .86 for Adjustment and .79 for Growth. Means and standard deviations for both scales can be found in Table 8. The scales showed partial metric invariance, and both convergent and divergent validity were demonstrated at late adulthood.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Timepoint</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>Adult 4</td>
<td>161</td>
<td>65.80</td>
<td>10.19</td>
<td>.88</td>
</tr>
<tr>
<td>9 items</td>
<td>Adult 3</td>
<td>202</td>
<td>62.94</td>
<td>10.69</td>
<td>.88</td>
</tr>
<tr>
<td></td>
<td>Adult 2</td>
<td>197</td>
<td>60.65</td>
<td>9.97</td>
<td>.85</td>
</tr>
<tr>
<td></td>
<td>Adult 1</td>
<td>184</td>
<td>56.68</td>
<td>11.23</td>
<td>.86</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td></td>
<td>61.52</td>
<td>42.08</td>
<td>.87</td>
</tr>
<tr>
<td>Growth</td>
<td>Adult 4</td>
<td>161</td>
<td>58.59</td>
<td>8.99</td>
<td>.80</td>
</tr>
<tr>
<td>9 items</td>
<td>Adult 3</td>
<td>202</td>
<td>55.22</td>
<td>9.98</td>
<td>.75</td>
</tr>
<tr>
<td></td>
<td>Adult 2</td>
<td>197</td>
<td>56.58</td>
<td>11.08</td>
<td>.80</td>
</tr>
<tr>
<td></td>
<td>Adult 1</td>
<td>184</td>
<td>50.27</td>
<td>11.29</td>
<td>.83</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td></td>
<td>55.17</td>
<td>10.34</td>
<td>.80</td>
</tr>
</tbody>
</table>

**Wisdom.** Wisdom-related Performance (WRP) was measured using the Berlin Wisdom Interview. Participants in late adulthood (age late 60s/early 70s) were presented with important life dilemmas or questions and asked to provide a verbal response. Laypeople
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trained as raters coded responses according to one each of five criteria on a seven point scale. The wisdom criteria are factual knowledge, procedural knowledge, lifespan contextualism, value relativism, and recognition and management of uncertainty; see Table 9 for further details. A participant’s WRP is their average score across criteria and tasks, with a minimum of 1 and a maximum of 7. The mean WRP score for this sample was 2.22 (N=145, SD=.88). See Wink and Staudinger (2016) for further information about the wisdom measure used in the full sample.

Analytic Strategy

Our first goal was to expose interindividual differences in intraindividual change over time (Nesselroade, 1991) in terms of growth and adjustment. A latent growth curve modeling approach can provide the first evidence of change or stability in growth and adjustment over time, and a distal outcome can be regressed onto the latent intercept and slope factors to test a longitudinal association. However, this approach assumes that a single trajectory can apply to all individuals and that covariates affect individual trajectories in the same way (Jung & Wickrama, 2008). In order to identify unobserved groups within the overall sample whose changes (or lack thereof) in adjustment and growth over time affect wisdom-related performance in different ways, we used latent class growth analysis (LCGA). LCGA is a special type of growth mixture modeling (Nagin, 1999) that assumes that variance and covariance of the latent growth factors is zero. This creates within-class homogeneity and between-class heterogeneity (Jung & Wickrama, 2008), such that each class has a unique
## Table 9. Wisdom Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Criteria</strong></td>
<td></td>
</tr>
<tr>
<td>Factual Knowledge</td>
<td>To what extent does this product show general and specific knowledge about matters of life (e.g., life events, institutions) and the human condition, as well as demonstrate both breadth and depth in the consideration of issues?</td>
</tr>
<tr>
<td>Procedural Knowledge</td>
<td>To what extent does this product consider decision and advice-giving strategies, whom to consult, how to define goals and identify ways to achieve them?</td>
</tr>
<tr>
<td><strong>Metalevel criteria</strong></td>
<td></td>
</tr>
<tr>
<td>Life-span contextualism</td>
<td>To what extent does this product consider the past, present, and possible future contexts of life and the many circumstances in which a person’s life is embedded?</td>
</tr>
<tr>
<td>Value relativism</td>
<td>To what extent does this product consider variations in values and life priorities and recognize the importance of viewing each person within his or her own framework, despite a small set of universal values?</td>
</tr>
<tr>
<td>Awareness and manage-</td>
<td>To what extent does this product consider the inherent uncertainty of life (in terms of interpreting the past and predicting the future) and effective strategies for dealing with this uncertainty?</td>
</tr>
<tr>
<td>ment of uncertainty</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Modified after Baltes et al. (1992)*
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intercept and slope value. This procedure is particularly recommended in the early stages of growth mixture modeling or for complex models and low sample sizes such as ours (Berlin, Parra, & Williams, 2014).

Using the maximum likelihood estimation procedure in MPLUS, we first established a baseline dual process latent growth curve model based on Growth and Adjustment measurements from three adult waves (early, middle- and late-middle adulthood, spanning approximately 23 years). Although we ran models for each process separately at first, our aim was to consider both processes simultaneously for further analysis. We then added wisdom-related performance to the model, regressing it on the latent growth factors. The decision to use only the first three adult time-points for the growth curves introduced temporal separation between the endpoint of the curve and the WRP measurement. This meant that limited causal conclusions could be drawn in relation to the association between the curves of both processes and the wisdom-related performance outcome.

Following this, we investigated whether a two-, three-, or four-class model offered superior fit. Although previous simple latent growth curve analysis using the IHD data found no gender differences and negligible cohort differences (Jones & Meredith, 2000), it is recommended to compare the final (unconditional) LCGA model with a conditional model including, for example, gender and cohort as covariates (Jung & Wickrama, 2008). Therefore, we ran our model two final times, including gender and cohort in separate analyses.

Results

Adjustment and Growth Trajectories: Baseline Dual Process Latent Growth Curve

We specified a dual process latent growth curve with three measurement points (early, mid- and mid-late adulthood) with the slope factor loadings of early adulthood fixed at 0 and the third adult time point at 1 for both Growth and Adjustment, and with all intercept
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loadings set at 1 for both processes. Slope variances for both processes were non-significant and needed to be set to zero when run simultaneously to avoid non-positive definite matrices. This indicated a lack of interindividual difference in the amount of change over the three adult timepoints and prevented further analysis with the latent slope factor within the latent growth curve models.

We compared models representing 1) linear growth functions for both processes by specifying time scores at the middle adulthood time-point at .47 (representing the proportion of time passed between young adulthood and mid-late adulthood); 2) and 3) one linear process and the other with a freely estimated middle time-point to model non-linearity; and 4) two processes with both middle time-points freely estimated. In each case, we ran models with correlated error terms for adjacent time-points within each process, autoregressive models within each process, and models with error terms correlated across processes within each time-point. The latter offered clearly superior fit statistics and we therefore incorporated this in all models presented. We compared models in terms of sample-size adjusted Bayesian Information Criterion (BIC), Comparative Fit Index (CFI), Root Mean-square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual. While higher CFI represents better fit, lower scores on the other statistics are more favorable. Results are presented in Table 10.

The clearly superior models were the two models that accounted for nonlinearity in Growth. Although CFI, RMSEA and SRMR statistics were marginally better for the full latent basis model 3, which estimated time scores for both processes, we chose to use model 2, which modelled linearity for Adjustment and non-linearity for Growth, to retain one degree of freedom in subsequent latent class analysis. Model 2 had good fit, $\chi^2 (10, N=203) =11.32, p=.34; \text{BIC}= 8495.41; \text{CFI}=.996; \text{RMSEA}=.025, p=.69; \text{SRMR}=.06$; parameter estimates obtained from this model are presented in Table 11. Because we had set the variance for the
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Table 10. *Fit Statistics for Overall Growth Curve Models*

<table>
<thead>
<tr>
<th>Model</th>
<th>df</th>
<th>$\chi^2$</th>
<th>BIC (ssa)</th>
<th>CFI</th>
<th>RMSEA ($p$)</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>38.85*</td>
<td>8520.81</td>
<td>.923</td>
<td>.11 (n.s.)</td>
<td>.09</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>11.32 (n.s.)</td>
<td>8495.41</td>
<td>.996</td>
<td>.03 (.69)</td>
<td>.06</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>35.34*</td>
<td>8519.44</td>
<td>.930</td>
<td>.11 (n.s.)</td>
<td>.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>9.70 (n.s.)</td>
<td>8495.94</td>
<td>.998</td>
<td>.02 (.71)</td>
<td>.05</td>
</tr>
</tbody>
</table>

*Note. df= degrees of freedom; BIC (ssa)=Bayesian Information Criterion (sample size adjusted); CFI=Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation; SRMR=Standardized root mean residual; *p<0.001. All models included correlated error terms across processes at each timepoint.*

Table 11. *Unstandardized Parameter Estimates for Model 2*

<table>
<thead>
<tr>
<th></th>
<th>Slope Factor Loading</th>
<th>Intercept</th>
<th>Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A1</td>
<td>A2</td>
<td>A3</td>
</tr>
<tr>
<td>Adjustment</td>
<td>0</td>
<td>.47</td>
<td>1</td>
</tr>
<tr>
<td>Growth</td>
<td>0</td>
<td>1.18</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note. N=203; A1=Early adulthood; A2=Middle adulthood; A3=Late-middle adulthood; *p<.05 **p<.01 ***p<.001*
two slope factors to zero, we only report the standardized coefficient for the correlation
to the two intercepts ($r=.31, p<0.001$), indicating a significant relationship between
initial values for Adjustment and Growth at young adulthood. Slope means (i.e. difference
between estimated scores at young adulthood and late-middle adulthood) indicate small
increases over adulthood in both Adjustment ($M=6.17$) and Growth ($M=4.58$). These
represent an average increase of less than one point on each 9-point scale, i.e. .62 of a
position for Adjustment and .46 of a position for Growth. While the trajectory for Adjustment
followed a linear increase, the trajectory for Growth was quite different, with a peak in
middle adulthood followed by a very small decline to late-middle adulthood. Figures 2 and 3
show observed individual trajectories for Growth and Adjustment at each of the three
timepoints. See also Figure 4, which illustrates the final curve for Growth with the rescaling
of time caused by estimating scores at middle adulthood.

![Image](image.png)

Figure 2. *Individual Trajectories for Adjustment.*
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Figure 3. Individual Trajectories for Growth, Time Score Fixed at Middle Adulthood.

Figure 3. Individual Trajectories for Growth, Time Score Estimated at Middle Adulthood.
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Wisdom as a Distal Outcome Regressed on Intercepts

We regressed WRP scores on the latent intercept factor when this was set to represent the initial value at young adulthood. The standardized coefficients for this model are presented in Figure 5. As predicted, the Growth intercept factor was a significant predictor of later life wisdom-related performance ($\beta=.46, p<.001$), and the Adjustment intercept factor was not ($\beta=.14, p=.15$), with an $R^2$ of .19 ($p<.01$) indicating a substantial portion of variance in wisdom-related performance explained by the intercept factors. We therefore retained the WRP score as a distal outcome in the subsequent latent class analysis.

Figure 4. Latent Growth Curve Model with Wisdom-Related Performance as a Distal Outcome.

Note: All coefficients are standardized. ***$p < .001$; Adj.=Adjustment; G1-3=Growth at young adulthood to late middle adulthood; A1-3=Adjustment at young adulthood to middle adulthood
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Latent Class Growth Curve Analysis for Personality Adjustment and Growth

To test for the presence of relatively homogeneous groups in the overall sample, we performed a set of LCGAs using the baseline latent growth model (see Figure 6) with variances for the intercept and slope factors set to zero, and then used five criteria to select the most appropriate number of classes for our sample. Firstly, the addition of a class should improve model fit as demonstrated by a smaller BIC and sample-size adjusted BIC statistic (Jung & Wickrama, 2008; Nylund, Asparouhov, & Muthén, 2007). Second, entropy values, which range from 0 to 1 and indicate the accuracy of classification based on posterior probabilities (Celeux & Soromenho, 1996; Muthén & Muthén, 1998-2012), should be above .75 and higher values indicate greater accuracy. Third, comparisons of a model with \( k \) classes against a model with \( k-1 \) classes should result in significant probability values for the bootstrapped likelihood ratio test (BLRT), the Lo-Mendell-Rubin likelihood ratio (LMR) test, and the Vuong-Lo-Mendell-Rubin (VLMR) test, although with a small sample size or unequal class membership sizes these may not be reliable (Nylund et al., 2007). A fourth consideration was that no class should contain less than 1% of the sample (Jung & Wickrama, 2008), and a final consideration was the subjective judgement in favor of parsimony, thus avoiding having classes that were close variants of one another in terms of their intercepts, slopes, and WRP mean values.

We compared three models, consisting of one, two, and three classes, using these criteria. As seen in Table 12, all BLRT results were significant. The other likelihood ratio tests indicated significant improvement for three rather than two classes (VLMR \( p=.046 \); LMR \( p=.049 \)) but not for four rather than three classes (VLMR \( p=.112 \); LMR \( p=.112 \)), suggesting that three was the maximum number of classes possible. On this basis, along with the highest entropy value (.768), we accepted the three class solution, despite slightly lower BIC statistics for the four class model.
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Gender and cohort as covariates of class. We tested for the effects of gender and cohort separately to represent conditional latent class growth models by regressing the latent class and latent growth variables (intercept and slope) onto each covariate. We were interested in substantial changes to the size of each class, significant regression weights for latent growth variables, changes to the distal WRP means, and odds ratios for class membership for each covariate. Although there were small changes to class sizes, no regression weights were significant for latent growth variables, indicating no direct effects of gender or cohort on intercept or slope for either Adjustment or Growth. Reporting of further analysis is based therefore on the more parsimonious unconditional model.
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Table 12. *Comparison Statistics for Number of Latent Classes*

<table>
<thead>
<tr>
<th></th>
<th>BIC</th>
<th>BIC(ssa)</th>
<th>Entropy</th>
<th>BLRT p value</th>
<th>LMR p value</th>
<th>VLMR p value</th>
</tr>
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<tbody>
<tr>
<td>2</td>
<td>9039.28</td>
<td>8969.58</td>
<td>.687</td>
<td>.000</td>
<td>.018</td>
<td>.016</td>
</tr>
<tr>
<td>3</td>
<td>8984.72</td>
<td>8896.01</td>
<td>.768</td>
<td>.000</td>
<td>.049</td>
<td>.046</td>
</tr>
<tr>
<td>4</td>
<td>8976.72</td>
<td>8869.00</td>
<td>.762</td>
<td>.000</td>
<td>.119</td>
<td>.112</td>
</tr>
</tbody>
</table>

*Note.* BIC(ssa)=Bayesian Information Criterion (sample size adjusted); BLRT= Bootstrapped Likelihood Ratio Test; LMR= Lo-Mendell-Rubin likelihood ratio test; Vuong-Lo-Mendell-Rubin likelihood ratio test

**Characteristics of latent classes.** Class sizes and means and standard deviations for latent growth factors are presented in Table 13, and class means for each timepoint are presented in Figure 7. The first class was the largest. It accounted for 89 of the participants (44%) and was characterized by the highest Adjustment (M=60.98) and lowest Growth (M=45.87) intercepts of the three classes. Slope means indicated significant increases over time in both Growth (M=7.14), the largest increase among the three classes, and Adjustment (M=6.87). This means that in young adulthood the members of this class were distinctly high in Adjustment and low in Growth, but that across adulthood their Growth as well as their Adjustment increased. We have labelled this class as *thriving* in the sense that their scores for both constructs show increases. The second group, with 37 participants (18%) was the smallest class, and had the lowest levels of both Adjustment (M=45.34) and Growth (M=43.45), with non-significant slopes indicating no change in either Adjustment (M=3.63) or Growth (M=3.48). The members of this class started low on both Adjustment and Growth.
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Table 13. *Growth and Adjustment Intercept and Slope Means and Wisdom-related Performance Means Separated by Class*

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>Male</th>
<th>Female</th>
<th>Younger</th>
<th>Older</th>
<th>Adjustment Intercept</th>
<th>Adjustment Slope</th>
<th>Growth Intercept</th>
<th>Growth Slope</th>
<th>WRP(s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>89</td>
<td>33</td>
<td>56</td>
<td>52</td>
<td>37</td>
<td>60.98***</td>
<td>6.87***</td>
<td>45.87***</td>
<td>7.14***</td>
<td>1.86 (.12)</td>
</tr>
<tr>
<td>Two</td>
<td>37</td>
<td>23</td>
<td>14</td>
<td>28</td>
<td>9</td>
<td>45.34***</td>
<td>3.63</td>
<td>43.45***</td>
<td>3.48</td>
<td>2.10 (.27)</td>
</tr>
<tr>
<td>Three</td>
<td>77</td>
<td>39</td>
<td>38</td>
<td>48</td>
<td>29</td>
<td>57.67***</td>
<td>6.90***</td>
<td>59.94***</td>
<td>2.77</td>
<td>2.65 (.14)</td>
</tr>
<tr>
<td>Total</td>
<td>95</td>
<td>108</td>
<td>128</td>
<td>128</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N=203; *p<.05 **p<.01 ***p<.001; WRP= Wisdom-related performance*
and did not change significantly across 23 years. We have labelled this class as *dormant*, acknowledging that at the mean level they show no maturation in terms of growth or adjustment. The third class, with 77 participants (38%), was characterized by an intermediate Adjustment intercept \((M=57.67)\) and the highest Growth intercept \((M=59.94)\). In addition, this class was distinctive because of an average slope for Adjustment \((M=6.90)\) but no significant change in Growth over time \((M=2.77)\). In other words, this third class was already strong in Growth in young adulthood and had an average level of Adjustment. It then continued to increase in Adjustment and remained stable in Growth. We have labelled this group as *activated* in recognition of their pre-existing high levels of Growth.

![Figure 6. Class Means for Growth and Adjustment.](image)

**Latent Dynamic Classes Relate Differentially with WRP**

Table 14 includes the mean WRP score for each class. The *activated* class had the highest mean WRP score \((M=2.65)\). The mean WRP score for the *thriving* class \((M=1.86)\) was the lowest, and was significantly lower than that for the *activated*. The *dormant* class was close to the mean \((M=2.10)\). Wald tests for significant differences between WRP means in the 3 classes were carried out; only the difference between *activated* and *thriving* classes was found to be significant, Wald \(\chi^2(1, N=203) = 23.14, p=.001\). Changes to relevant
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parameters and class sizes when gender and cohort are included as covariates in the model, as well as class sizes and means when the WRP distal was not included are presented in Table 14.

Table 13. Class Membership with Covariates and without Wisdom-related Performance

<table>
<thead>
<tr>
<th>Class</th>
<th>Unconditional</th>
<th>Gender as covariate</th>
<th>Cohort as covariate</th>
<th>Without WRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>89 1.86</td>
<td>93 1.86</td>
<td>91 1.86</td>
<td>95 1.96</td>
</tr>
<tr>
<td>Two</td>
<td>37 2.10</td>
<td>38 2.05</td>
<td>35 2.12</td>
<td>36 2.13</td>
</tr>
<tr>
<td>Three</td>
<td>77 2.65</td>
<td>72 2.69</td>
<td>77 2.64</td>
<td>72 2.56</td>
</tr>
</tbody>
</table>

Note: Classes were given the following labels: Class One “Thriving”; Class Two “Dormant”; Class Three “Activated”

Discussion

The aim of this investigation was to shed light on how adult personality development across 30 years (from young to late-middle adulthood) is related to later life wisdom. Firstly, we aimed to describe overall latent trajectories of change in adjustment and growth from young adulthood to late-middle adulthood, and secondly to test the association between latent growth factors and late-adulthood wisdom. Thirdly, we aimed to identify latent classes within the sample that are heterogeneous with respect to the initial values and degree of change over time in terms of growth and adjustment. We simultaneously investigated differences in mean wisdom-related performance scores.
Adjustment and Growth: Linear and Non-linear Trajectories

In testing for latent growth curves that best described the data from this 40-year longitudinal study, we found that over approximately the first approximately 23 years, Adjustment followed the expected, approximately linear trajectory of steady increase from young adulthood to late middle adulthood. In contrast, a non-linear, latent basis model offered best fit for Growth, that is, with a peak at middle adulthood that dropped at late-middle adulthood to a level slightly above the initial value. The average increase in Adjustment observed in this sample is what was anticipated. It accords with previous research showing increases in the strongest indicators of adjustment such as conscientiousness and agreeableness toward late adulthood (Staudinger & Kunzmann, 2005), and supports the ‘maturity principle’ (Roberts et al., 2001). While Growth showed an overall pattern of increase, the observed peak was at middle-adulthood before a small decline occurred towards late-middle adulthood. The peak at middle adulthood is in line with our expectations. However, an overall increase in Growth over time was not expected to be the norm: the indicators typically associated with growth such as openness to experience and purpose in life are characterized by stability across adulthood and declines in later adulthood.

One advantage of the latent growth curve modeling technique is the possibility to analyze covariance between latent growth factors. In this case we were only able to test the relationship between Growth and Adjustment intercepts, which was significant. The finding that these constructs are positively associated with each other at young adulthood joins similar findings from adolescence (Law et al., 2018b) and late adulthood (Wink & Staudinger, 2016).

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5 We have previously established using the same measure in this sample that there is a small increase in Growth between late-middle adulthood and late adulthood (Law et al., 2018a)
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Late Adulthood Wisdom-related Performance as a Distal Outcome of the Trajectories.

Adding wisdom-related performance to the latent growth curve model as a distal outcome did not change existing parameters, and demonstrated that initial values of Growth in young adulthood are predictive of later life wisdom-related performance measured 40 years later. This is a highly important finding in support of the ontogenetic model of the development of wisdom (see Staudinger & Baltes, 1994; Baltes & Smith, 2008). It suggests that irrespective of the life events experienced by an individual, the growth-related thoughtfulness, insight, and ethical consistency with which one faces and even seeks those events from the very beginning of adulthood is an important factor in the development of later life wisdom. We note again that personality explains more variance in concurrent WRP in adolescence than in adulthood (Staudinger & Pasupathi, 2003). Our Growth measure at young adulthood explained a substantial amount of variance that may be due to conceptual overlap with many of the other variables included in studies into the psychometric location of wisdom, such as creativity, moral reasoning, and intelligence (Pasupathi et al., 2001; Pasupathi & Staudinger, 2001; see Staudinger, Lopez, & Baltes, 1997). This is not to say that our finding represents an over-estimation of the unique longitudinal relevance of growth by early adulthood. Rather, our Growth measure is a useful unifying construct that itself may represent very well the individually measurable constructs related to it.

That levels on our Adjustment measure at young adulthood are not related to later life wisdom is unsurprising, as it has been suggested previously that some level of adjustment is sufficient for the development of wisdom, (Staudinger & Kunzmann, 2005). However, it has never been suggested that high levels are necessary. Instead, previous research indicates either that there is no concurrent relationship (Law et al., 2018b), or that the concurrent relationship between adjustment and WRP is mediated by growth (Wink & Staudinger,
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2016). We discuss the role of adjustment further below in light of the findings from the latent class growth analysis.

**Latent Class Growth Analysis: Are there distinct subgroups?**

A relatively parsimonious three class solution was selected in light of fit indices and substantive meaning. The three classes are distinct in terms of Adjustment and Growth intercept and slope and their relationship with the distal wisdom-related performance outcome. The largest group (*thriving*) appear similar to Helson and Srivastava’s (2001) Conservers, who favored security and stability and who showed conformity and adherence to traditional values.

With initially high Adjustment and low Growth, those who are *thriving* achieve the lowest mean WRP, supporting the hypothesis that individuals high in adjustment seek social rather than self-transcendent goals. This occurs despite substantial increase in Growth over time: this is the only class that had a significant slope for Growth. On the one hand, this may represent a kind of foreclosure (Marcia, 1966) at young adulthood that, over the span of 40 years, stifles the development of wisdom, perhaps because very high levels of early adjustment actually prevent growth in the same way that identity commitment can prevent identity exploration. On the other hand, it may be that this group would score higher on measures of personal wisdom (see Staudinger & Glück, 2011) or practical wisdom (see Wink & Helson, 1997), and on other positive outcomes not tested in this study.

In contrast, the *activated* class demonstrates the pathway to the highest mean WRP; a level of initial Adjustment just below average, with typically steady increase, and high initial Growth that is stable. As indicated above, it should be expected that a class with a higher than average Growth intercept would also have the highest WRP. It is noteworthy that the slightly below average levels of initial Adjustment did not prevent this. Additionally, given that there was a significant overall correlation between the latent Growth and Adjustment intercepts in
the whole sample, the polarity of initial values on the two scales in this group is also
interesting. It again supports the notion that there is dynamic interplay between growth and
adjustment leading up to young adulthood that results in more differentiation between the two
scales by the beginning of the trajectories in this study. The activated class therefore contains
individuals who are similar to Helson and Srivastava’s (2001) Seekers and to Josselson’s
(1996) Searchers: they are concerned more with self-exploration than social goals. It appears
that the steadily increasing Adjustment trajectory of this class indicates the exclusion of the
at-risk subgroup of Searchers described by Luyckx et al. (2008), and reinforces the view that
growth alone is not sufficient for the development of wisdom. Rather, it needs to be
accompanied by some level of adjustment at young adulthood and an increase over time.

Our dormant class is a small group of people who at young adulthood had low levels
of Adjustment and Growth and that did not change significantly through adulthood. This
pattern is similar to the Depleted group who received little attention in Helson and Srivastava
(2001) because this trajectory did not indicate positive mental health. Josselson (1996)
labelled a similar class Drifters, reflecting their diffuse status (Marcia, 1966). Luyckx et al.
(2008) were not able to replicate the equivalent class in their longitudinal sample, probably
due to the underrepresentation of those with the difficulties associated with identity diffusion.
It is perhaps an indication of the validity of our findings that we have identified a small class
of diffuse individuals within the sample. It should be noted, however, that the WRP scores of
this class were spaced out around the mean, indicating that despite the dormancy of
maturation with respect to adjustment and growth, other factors acted on this group to allow
some members to attain above average WRP scores.

Taken as a whole, the latent class growth analysis has revealed three important
clarifications to the baseline growth curve. Firstly, given the overall lack of variance in slope
scores, it proved beneficial to investigate latent class membership. In this way, we find
stronger evidence that an increase in adjustment over adulthood is indeed the norm, with only the dormant class remaining flat. Secondly, the establishment of classes has allowed us to remove from consideration the small group of individuals who show no signs of overall positive personality development. In effect, this makes the contrast between the other classes sharper, with significant differences in three specific ways: their later life WRP score, their initial Adjustment and Growth scores, and their increase in Growth and Adjustment. In particular, this allowed us to identify the activated, a class of people who had very high levels of growth already by young adulthood, and who maintained that level of insightful thinking, interest in new activities, and skepticism through to later life, at which point they demonstrate higher levels of wisdom than others. Thirdly, in the case of both the activated and thriving groups, one of our two constructs was initially above average, and the other was low but increased over the span of adulthood analyzed. This is somewhat similar to Jung’s concept of enantiodromia, which describes the integration of opposites as an important mechanism of personality development: the dominance of either growth or adjustment sparks the compensatory expression of the other (see Wink, 1999). Adjustment and growth have to date not been conceived as oppositional tasks, and the developmental trajectories exposed in the latent class analysis suggests that further understanding of their dynamic interplay longitudinally may be necessary.

An intriguing possibility is that within individuals, high levels of growth represent a long-lasting divergence from typical personality development that is resistant to decay. This could lend credence to one of the most important tenets of the ontogenetic model that suggests that the greatest potential for wisdom lies in older people. This potential exists despite declines in openness, perhaps because there is a sufficiently high level of growth that represents saturation in this form of personality development before declines begin. Once an individual is engaging with their life using insight and reflection, some of the characteristics
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that facilitated personality maturation in this manner up until that point are themselves
transcended. In other words, it is no longer necessary to seek new experiences, either because
one’s interests are now sufficiently wide, or because enough insightfulness has been gained.
This would mean that regardless of the age at which a person begins functioning at a high
level in terms of growth, it is specifically then that the seeds of wisdom are sown for that
person. As such, the path to wisdom indeed has idiosyncratic and non-normative elements to
it (Baltes, Reese, & Lipsitt, 1980; Pasupathi et al., 2001), but by investigating trajectories of
growth and adjustment, we see that those on the path have much in common.

The role of adjustment in relation to wisdom is also of interest: with adjustment
steadily increasing alongside growth, this may buffer against the existential difficulties that
come with intense introspection, such that adjustment forms a scaffold to support the
development of growth. But at least in terms of wisdom, there is no benefit from very high
levels of adjustment in young adulthood. In fact, further research is necessary to determine
whether very high levels of adjustment in adolescence or young adulthood are stifling to the
development of wisdom. Prematurely high levels of adjustment may be similar to identity
foreclosure (Marcia, 1966), in that they represent a departure from the important activities of
experimentation and exploration in favor of deference to given social roles. This would make
adolescence and emerging adulthood particularly sensitive times for the beginning of wisdom
development. This is so not only because of the potential generated by increases in such areas
as reasoning, moral development and theory of mind, but also because it is then that
individuals are most susceptible to the social pressures that might shift them toward
conserving rather than seeking: perceptions of pressure to complete developmental tasks may
stifle the growth potential of young people.
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Limitations

As with other investigations using this longitudinal sample, we acknowledge that the pathways we observe may be unique to this group of people who were relatively homogeneous when selected in the 1920s. They are in the majority white, slightly above average in social class and education, and all born in the same geographical area. Moreover, the patterns observed could also be bound to both culture and historical period, and shared generational experiences. However, the similarity of our findings to those of quite different samples (Helson & Srivastava, 2001; Josselson, 1996; Luyckx et al., 2008) should encourage further work in other longitudinal samples to further elucidate our understanding of how personality development by young adulthood affects later life wisdom. We further acknowledge that there are a number of other individual variables such as education, social status, and parents’ education that may affect the relationships identified, and the effects may be reciprocal, e.g., growth may contribute to higher levels of education, and education may increase growth. Similarly, cross-lagged relations between adjustment and growth will need close inspection.

Conclusions and Outlook

A number of skills and personal characteristics are required for the production of high levels of wisdom-related performance in later life. In this paper, we have shown that personality development by young adulthood plays an important role in developing the necessary expertise. Furthermore, we now have longitudinal evidence to support claims relating to changes in adjustment and growth over the lifespan. Specifically, adjustment increases over time, but its increase is not directly related to WRP, and the fundamental skills in insight and life review needed to perform well in wisdom tasks in late adulthood are already established by young adulthood. We now are faced with two important questions that warrant future investigation. Firstly, what conditions lead to the development of high levels
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of growth already by young adulthood? Identifying intrapersonal characteristics in children and interpersonal or environmental conditions that encourage the development of growth and adjustment will help us better understand the differences in these constructs and the different ways that they affect lives. Secondly, what is the role of adjustment in relation to growth and wisdom? For example, is attaining high levels of adjustment during adolescence and emerging adulthood a threat to development on the growth trajectory, and is this also the case across the lifespan? Clearly these important questions can only be answered if more longitudinal studies address both forms of positive personality development, and look to include measures of wisdom as an ideal outcome of successful aging.

Acknowledgements

The first author would like to thank Georgi Dragolov and Klaus Boehnke for suggestions and advice in the early stages of analysis. We are also grateful to Michele Dillon for editorial comments.
VII. TRANSITIONAL CHAPTER TO STUDIES 3 AND 4

One important question raised in Study 1 was whether the scales we created for personality growth and adjustment in adulthood would also be applicable in adolescence, because the constructs had only been discussed in relation to adults (Staudinger & Kunzmann, 2005). Answering this question becomes more important in light of one key finding from Study 2: the highest class mean for wisdom-related performance in Study 2 was for the activated class, who already had high Growth scores by young adulthood. An important question that followed Study 2 is whether this finding meant that personality growth and adjustment were already useful to distinguish individuals before young adulthood.

Studies 3 and 4 were carried out in one paper, in order to help answer these important questions: is a distinction between personality growth and adjustment in adolescence valid and useful? Given the overall intention of this dissertation to investigate the longitudinal roles of personality adjustment and growth in the development of wisdom, it is vital to establish whether the constructs are at all viable in adolescence, and if so, are they identical to the adult constructs, or are there important differences? It has been recognized that there are both similarities and differences between adult and adolescent personality structure, particularly in terms of the Big Five traits, and a call has been made for researchers to explore these differences (Soto & Tackett, 2015): Studies 3 and 4 provide evidence that personality growth and adjustment in adolescence are valid constructs that are indeed slightly different from what we know of them in adulthood.

It had already been suggested that the seeds of wisdom may be found in adolescence (Pasupathi et al., 2001), and it had already been established that personality is associated with wisdom-related performance in adolescence. Because a large number of conceptually related
constructs were measured in the same dataset, it was possible to revisit the data from Pasupathi et al. (2001), which uniquely among studies of adolescents contains a performance measure of wisdom. It was possible to use that measure of wisdom and a measure of life satisfaction as criteria against which to judge the validity of latent Personality Growth and Personality Adjustment factors respectively. Using the German adolescent sample, which was both rigorous in sampling and intensive in terms of the range of measures used, we could test whether latent Personality Adjustment and Growth factors perform similarly in terms of their relationship with Big Five personality traits and Ryff’s personality dimensions to what has already been demonstrated in adulthood (Wink & Staudinger, 2016) and thereby support the validity of the distinction between two forms of positive personality development, adjustment and growth, starting in adolescence.

The availability of the IHD adolescent waves presented a unique possibility: because we had already validated the Personality Adjustment and Growth scales in Study 1, it was possible to compute scale scores in the adolescent waves. While there is substantial dissimilarity in sample and measures, the questions of whether the distinction between personality growth and adjustment is viable in each sample, and whether there was similarity in the factor structure, were still answerable. It is questionable whether the comparison constitutes cross-validation, but placing the results side by side offers some resistance to the possible criticism that the CFA is carried out only in one sample (e.g., Henson & Roberts, 2006). Study 4 was therefore carried out and joined to the empirical paper presented in Chapter 8.

During Study 1, we removed some items from the scales on the basis of inconsistent factor loadings at different time points. This represented the first signs that there are differences in the ways that personality growth and adjustment manifest at different points in
a person’s life (i.e., some degree of discontinuity). There was an inevitable tension in Study 1 between the aims of validating a scale at the later life time point and investigating invariance across adulthood. Although the more complete version of the scale was shown to function as expected at late adulthood, it was desirable to return to the most complete version of the scale for Study 4 in order to consider how similar scores would be in adolescence. However, the IHD dataset would not allow this, because of the use of different versions of the California Q-sort in adolescence and adulthood (see Block & Haan, 1971). Our expert ratings were done using the adult version of the scale, and as a result, several items selected as highly relevant to adjustment, and in particular to growth, were not available in adolescence. Study 4 is therefore restricted to adolescence only, and the focus is, rather than looking for continuity across the lifespan, on continuity of a structural model across samples within adolescence.

Earlier the distinction was invoked between explanatory and descriptive discontinuity (Staudinger & Pasupathi, 2003): the agglomeration of different Q-sort items in different ways in adolescence appears to represent explanatory discontinuity, and the descriptive continuity can only be judged with sufficient perspective from a broad overview of all three papers. The prima facie evidence supporting the inclusion of Study 4 at all was that, as in Study 3, a third factor containing items relating to social competence also emerged. This paper, therefore, directly addresses the call for more work on establishing the viability of adult constructs in adolescent samples referred to above (Soto & Tackett, 2015), primarily for the purposes of cross-validation of the original Study 3 factor structure.
Personality Maturation in Adolescence in Two Samples:
Is the Distinction Between Growth and Adjustment Useful?

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Abstract

During adolescence, personality maturation is typically associated with the accumulation of personal resources to master socially prescribed developmental tasks on the cusp of adulthood. Although personality maturation in adulthood tends to be described as one developmental trajectory, a distinction between two types of positive personality development, ‘personality growth’ and ‘personality adjustment,’ has been found useful in adult samples. To date, the validity of this distinction has not been tested in an adolescent sample. We tested the validity of a latent factor structure including both a Personality Adjustment and a Personality Growth factor and replicated it in a second sample. Study 3 used personality questionnaire data from a sample of 146 German adolescents (average age 16.8 years) to establish a 3-factor structure consisting of Personality Growth, Personality Adjustment, and a third factor, Social Competence, indexing maturation with regard to interpersonal relations. As expected, Personality Growth had a significant positive relationship with wisdom-related performance and Personality Adjustment with life satisfaction. In Study 4, we used confirmatory factor analysis to replicate the 3-factor structure in a U.S. adolescent sample using Q-sort data from late adolescence (approximately 18 years.). We found good fit for a 3-factor model with factors analogous to those of Study 3. These studies provide strong support for the applicability of the distinction between personality growth and personality adjustment in adolescence. At the same time, we discovered that maturation in terms of social relations presents a feature specific to adolescence, which has implications for positive personality development in and beyond adolescence.

Keywords: personality, development, growth, adjustment, wisdom, adolescence
Although the structure of personality in adults has been studied intensively, there is to date less work focusing on adolescents. An increasing body of research shows that personality in adolescence and emerging adulthood has effects on, for example, resilience in adulthood (Aldwin & Igarashi, 2012; Staudinger & Greve, 2016; Werner & Johnson, 2004), coping and adjustment (e.g., Luyckx et al., 2008), subjective wellbeing (e.g., Friedman et al., 2010), psychological wellbeing (Ryff, 1989), and social maturity (e.g., Helson & Wink, 1987). It is important to develop a better understanding of how personality characteristics manifest in adolescence and whether their association patterns differ as compared to adulthood. Findings from adolescent samples to date indicate, for instance, that established personality traits such as conscientiousness and agreeableness carry different meaning in younger samples (Soto & John, 2014). Thus, it seems important to further investigate the nature of these differences (Soto & Tackett, 2015).

It is not surprising that there is little research on differentiating types of positive personality development in adolescence. Rather, the research has tended to assume that there is one type of positive development that follows the ‘maturity principle’ (Caspi, Roberts, & Shiner, 2005), which is postulated to occur along a single, normative (i.e., average) trajectory. Recently, a conceptual distinction has been introduced for adulthood between a more typical pathway, labeled as maturation towards adjustment, and another that is non-normative (i.e., less frequent), labeled as maturation towards growth (Staudinger & Kunzmann, 2005). Empirical work on the usefulness of this distinction so far has only been carried out for the adult lifespan and has demonstrated that indeed it is feasible and useful to operationalize and study both positive trajectories separately (e.g., Staudinger & Kessler, 2009; Wink & Staudinger, 2016). Personality Adjustment and Growth have been identified as latent constructs in adults, and Personality Growth has been shown to be more strongly associated with wisdom-related performance whereas Personality Adjustment was linked with
subjective wellbeing (Wink & Staudinger, 2016). Because it is not yet clear whether the
distinction between maturation towards adjustment (in short, personality adjustment) and
maturation towards growth (personality growth) is also useful in adolescence, in this paper
we investigated the distinction between personality adjustment and personality growth in one
adolescent sample and tested the replicability of the distinction in a second adolescent
sample.

**Personality Maturation Towards Adjustment: Evidence from Adulthood**

The successful completion of prescribed and institutionally supported developmental
tasks has been found to lead to positive outcomes such as well-being, mental health (in terms
of the absence of maladjustment), and effective functioning in society (e.g., Havighurst,
1972). Staudinger and colleagues have labelled this type of personality development as
maturation towards adjustment (e.g., Staudinger & Kunzmann, 2005) and described societal
scaffolding to facilitate adjustment as an essential factor in the survival of any human
community: the extent to which members of a given society are functioning well is at least
partly dependent on members’ awareness and mastery of its implicit and explicit rules and
regulations. Three Big Five traits have repeatedly been linked to personality adjustment:
emotional stability (the opposite pole of neuroticism), conscientiousness, and agreeableness,
which are typical predictors of subjective well-being in adults (e.g., Soto, 2014).

Our notion of personality adjustment and growth not only includes trait-based
personality but also incorporates change-sensitive personality characteristics. Ryff’s (1989)
measure of Psychological Wellbeing (PWB) is one such example, based on a tradition of
interest in personality change and growth. Three of Ryff’s PWB dimensions have been found
to be relevant to personality adjustment: environmental mastery, self-acceptance, and positive
relations with others (Ryff & Singer, 2008; Staudinger & Kunzmann, 2005). These
dimensions tend to share relationships with the adjustment-related personality traits above
(Ryff, 2014), and have been included in empirical work on adjustment (Law, Wink, & Staudinger, 2018a; Wink & Staudinger, 2016).

**Personality Maturation Towards Growth: Evidence from Adulthood**

A second trajectory of positive personality development that focuses on transcendence of the framework provided by a given society has been called personality growth (Staudinger & Kunzmann, 2005) and is linked with but not exhausted by work on intrapsychic maturity (Helson & Wink, 1987), ego development (Loevinger & Blasi, 1976) and positive mental health (e.g., Compton, Smith, Cornish, & Qualls, 1996). A key feature of personality growth that differentiates it from these other constructs is that personality growth implies maturation towards an endpoint, that is, wisdom, which incorporates a balance of self-realization and interest in a greater good, rather than an exclusive focus on intrapersonal development (Staudinger & Kunzmann, 2005). It remains unclear at what age the personality growth trajectory might begin to manifest, and indeed whether age, rather than idiosyncratic factors, should have any influence, since wisdom shows no relationship with age during adulthood (Pasupathi, Staudinger, & Baltes, 2001).

The only Big Five personality trait that is directly associated with wisdom is openness to experience (Mickler & Staudinger, 2008; Staudinger, Lopez, & Baltes, 1997; Staudinger & Pasupathi, 2003), and it is also a predictor of psychological well-being (Ryff, 1989). Three of the PWB dimensions were found to be related to growth in adulthood, that is, personal growth, purpose in life, and autonomy. All three are conceptually linked to notions of growth developed within the positive mental health tradition (Jahoda, 1958; Maslow, 1954; Rogers, 1962). A sense of wellbeing from growth as measured by these three PWB scales is structurally related to wisdom in older adults (Wink & Staudinger, 2016). To date we are not aware of any adolescent research that suggests a different pattern of relations with the PWB measures.
It is noteworthy that the fifth personality trait in the Big Five Model, extraversion, has not been included in adult models of adjustment or growth (cf. Staudinger & Kunzmann, 2005), primarily because its two facets, social vitality and social dominance, follow different trajectories in adulthood: only social dominance tends to increase beyond young adulthood (Roberts, Walton, & Viechtbauer, 2006) and has been considered part of the ‘maturity principle’ (Roberts, Wood, & Caspi, 2008).

**Expectations of Adjustment and Growth in Adolescence**

We expect a model of personality adjustment and growth to show fit in an adolescent sample, and to be similar to the adult version of the model: the core of both personality adjustment and growth seems applicable to both age groups. For example, the maturity principle (Caspi, Roberts, & Shiner, 2005) appears to take hold in adolescence, with small increases in conscientiousness and agreeableness (Roberts & Mroczek, 2008). We can also expect that personality adjustment in adolescence is a correlate of adolescent wellbeing: there is evidence that life satisfaction in adolescence is significantly related to extraversion and emotional stability (Gilman & Huebner, 2003; Suldo & Huebner, 2006).

Very little research has been carried out in adolescent samples using the PWB scales, and although there is generally support for a six-dimensional structure, most research investigating influences on PWB treat it as a single construct rather than using the dimensions separately (Crespo, Kiepiokowski, Pryor, & Jose, 2011; Cuadra & Moyano-Díaz, 2012; Fernandes, Vasconcelos-Raposo, & Teixeira, 2010; Sirigatti et al., 2009; van Dierendonck, Díaz, Rodríguez-Carvajal, Blanco, & Moreno-Jiménez, 2008). There is evidence to suggest that early adulthood environmental mastery is associated with later life well-being (Helson & Srivastava, 2001), and this dimension tends, along with positive relations with others and self-acceptance, to increase or stay stable with age (Ryff & Singer, 2008). Similarly, personal growth in early adulthood is associated with later wisdom (Helson & Srivastava, 2001).
first hypothesis therefore was that the adult distinction between personality growth and adjustment is present and detectable in adolescence, with comparable indicators of comparable factors.

There are some qualifications to this, however. In general, when different phases of life are compared, potential predictors that are normatively rarer at a given period in life have been found to be more closely linked with wisdom (Staudinger & Pasupathi, 2003). This means that although in adulthood, conscientiousness is not related to growth (Wink & Staudinger, 2016), in adolescence, when mean levels of conscientiousness are lower than in adulthood, we should expect a positive relationship with growth. Conscientiousness reflects an individual’s tendency to follow societal rules and expectations, and tends to be associated in factor analyses with agreeableness and emotional stability (e.g., Digman, 1997). However, conscientiousness encompasses several developmentally relevant facets, including what Digman and Inouye (1986) called the will to achieve. The originally considered label ‘direction’ for this personality trait (Costa, McCrae, & Dye, 1991) reflects that it is not just about cautious dutifulness, or dependability (see Jackson, Paunonen, Fraboni, & Goffin, 1996), but also about movement and striving. This may account for a double-loading onto both the alpha/stability factor (demonstrating success of socialization) and the beta/plasticity factor (representing personal growth) in a sample of adolescents (Slobodskaya, 2011). In previous work with childhood samples, a strong association between conscientiousness and openness was found (Goldberg, 2001). Inasmuch as conscientiousness captures notions of movement, striving, and persistence, it is, we expect, also a feature of personality growth in adolescence.

Openness to experience also shows mean-level gains during adolescence, signifying typical personality maturation during adolescence (Roberts & Mroczek, 2008). In this vein, openness is linked with identity exploration (Luyckx, Soenens, & Goossens, 2006), meaning
that some personality growth is a necessary part of completing the task of identity achievement. At the same time, however, low levels of openness can protect against too many novel experiences, and for some this avoidance of the new in favor of the predictable is highly functional, in terms of maintaining subjective well-being in times of high developmental dynamics (Weiss, Freund & Wiese, 2012). Specifically, in adolescence, this can mean a preference for conservation and tradition, and identity acceptance without exploration, which is associated with mastery rather than growth (Helson & Srivastava, 2001). Thus, in adolescence, openness should still positively load on a latent Personality Growth factor, but also negatively on a Personality Adjustment factor.

The final difference we expect in comparison to the adult model concerns the inclusion of extraversion in an adolescent model. Trajectories of the two facets of extraversion diverge in early adulthood and the trait is therefore not included in adult Personality Adjustment or Growth factors. During adolescence, levels of the two facets of extraversion are closer together and trajectories are similar (Roberts et al., 2006). Therefore, we decided that it would be useful to include this personality characteristic when studying personality maturation during adolescence. However, it is not clear whether extraversion should be considered indicative of personality adjustment, growth, or both. While extraversion frequently shares variance with openness to experience as part of a beta or plasticity factor in structural personality work (e.g., Digman, 1997; Slobodskaya, 2011), and therefore may be an indicator of personality growth in adolescence, signs of social competence such as warmth and positive social relations with others have been found to be a facet of personality adjustment (Law et al., 2018a). Whether in an adolescent sample the inclusion of extraversion is easily accommodated by the existing two-factor model of Adjustment and Growth (Wink & Staudinger, 2016) is therefore an open question.
Extraversion may, for example, draw other indicators of social competence together to form a third factor.

In sum, we expected significant positive loadings on a Personality Adjustment factor for Conscientiousness, Agreeableness, and Emotional Stability, along with the PWB dimensions of Environmental Mastery, Self-Acceptance, and Positive Relations with Others, and a negative loading for Openness to Experience. As for Personality Growth, we expected significant positive loadings of Conscientiousness and Openness to Experience, along with the PWB dimensions of Personal growth, Purpose in Life, and Autonomy.

With regard to Extraversion our hypothesis was much more exploratory. We expected it to play a more central role in personality maturation than in adulthood, possibly being linked with both Personality Adjustment and Growth or even form its own dimension of personality maturation indexing interpersonal competence by associating with the characteristics of Positive Social Relations and Agreeableness.

Validating the Adjustment-Growth Distinction in Adolescent Samples

If the distinction between personality adjustment and growth is meaningful for an adolescent sample, we would expect latent Personality Growth and Adjustment factors to be related to theoretically derived markers of these two types of personality maturation. To confirm this, we focused on two key markers: life satisfaction as a marker of adjustment; and wisdom as a marker of growth. We were lucky enough to have performance and observational measures of wisdom included in both studies.

A marker of adjustment: Life satisfaction. As explained above, the maintenance of subjective well-being through adulthood is one key function of an adjustment trajectory. Maintaining such positive affect can require both emotion and behavior regulation strategies that may prevent active engagement with life’s challenges, particularly when one’s motivation is to preserve positive mood by avoiding situations that might induce negative
affect. It has been shown that it is no more difficult for older people than younger to review their past positively (Wink & Schiff, 2002) and indeed it may be an important skill developed over the lifespan to assist in preventing negative outcomes and maintaining subjective well-being. We expected therefore that those showing the most personality adjustment would also demonstrate higher concurrent levels of life satisfaction.

**A marker of growth: Wisdom.** A constellation of individual characteristics, of which personality growth is just one, is necessary but still not sufficient for the development of wisdom (Baltes & Staudinger, 2000). There is evidence to support this in adults (e.g., Staudinger et al., 1997; Wink & Staudinger, 2016), as intelligence, personality, and profession, among other variables, have all been found to explain some of the variance in wisdom-related performance (WRP, see below). Crucially, there is no relationship between age and WRP in an unselected sample of adults, suggesting that the development of wisdom is not normative in adulthood, but there is a strong relationship between age and WRP performance during adolescence (Pasupathi et al., 2001). Age per se is unlikely to be the sole cause of this: during adolescence, the capacity for wisdom-related performance increases because of other important developmental changes, including increases in crystallized and fluid intelligence, the development of the life story (Habermas & Bluck, 2000), moral reasoning, and empathy. Indeed, one study has compared adolescent and adult samples in terms of patterns of relation between wisdom and its correlates, finding that among adults, complex, later developing characteristics (moral reasoning, social intelligence and creativity) were related to wisdom, while among adolescents, more basic, earlier developing characteristics (crystallized intelligence and openness to experience) were linked with wisdom (Staudinger & Pasupathi, 2003). In the present study, we expected the Personality Growth factor to be associated with higher levels of wisdom-related performance, while the Personality Adjustment factor would not show such an association.
A Replication Approach

Study 3 addressed two main areas of investigation. Firstly, we asked whether the distinction between personality adjustment and growth was observable in adolescence as it was for adults. To answer this question, we applied a structural equation modelling framework and tested the applicability of a model similar to that of Wink and Staudinger (2016). Secondly, we sought to validate the distinction by testing for expected relationships between the latent Personality Growth factor and wisdom-related performance, and between the latent Personality Adjustment factor and life satisfaction.

As this study is the first one to apply the distinction between personality adjustment and growth to an adolescent sample, we wanted to replicate our findings in a second sample. Therefore, in Study 4 we used an U.S. adolescent sample and a different measurement approach to replicate the CFA findings of Study 3. Having previously created scales based on Q-sort data for the adult waves of the Berkeley and Oakland Growth and Guidance studies held by the IHD at Berkeley (Law et al., 2018a), we adapted these scales for use with the adolescent data. We carried out confirmatory factor analysis using the full set of items to test the applicability of the model to the second sample to strengthen our claims about the validity of the distinction between personality adjustment and personality growth. For this second sample, our one question was whether items indicative of Personality Growth and Personality Adjustment would load on analogous factors as identified in Study 3 even though a different measurement approach was used.
Study 3

Method

Participants

Great care was taken to recruit a diverse sample of adolescents. Recruitment of this adolescent sample involved approaching teachers from a range of schools in the Berlin area with varying focus on academic achievement, in order to gather a heterogeneous sample, especially as regards family socioeconomic status. One teacher from each age group (14, 15, 16, 17, 18 and 19 years old) in each school was asked by researchers to select 4 students from the class according to their sex and position on the class register. Permission was initially sought from the selected schools and following the selection of students, parental permission was sought.

This resulted in a sample of 198 students, 52 of whom were excluded, either because they were non-native German speakers or because they declined to participate. Those under 17 years (n=104) were recruited from Hauptschule, Realschule and Gymnasium (Gymnasium having the greater focus on academic achievement). Older students between 18 and 20 years old (n=42) were recruited from Gymnasium and Berufsschule (Berufsschule having a focus on vocational training, typically with apprenticeship). Participants in the final sample were aged between 14 and 20 (M = 16.8, SD = 1.8, 54% male).

Procedure

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6 This study was carried out as part of a larger project and the sample has been described previously in Pasupathi, Staudinger and Baltes (2001) and Staudinger and Pasupathi (2003).
The study was completed over three sessions and participants received the equivalent of approximately 30 Euros. The sessions were spaced at least a week apart but no more than 3 weeks apart, each taking approximately 1.5-2 hours. The first included training in the Berlin Wisdom Interview (see Staudinger, Baltes, & Smith, 1994) and presentation of the first three out of six dilemmas. A wide range of cognitive and personality measures were employed across the three test sessions. The second set of three dilemmas was presented in the second session, along with measures of crystallized intelligence and trait personality. The third session included the measure of PWB.

Materials

**Indicators of Personality Growth and Adjustment.** (i) **Personality.** The German version (Borkenau & Ostendorf, 1993) of the short form of the NEO Personality Inventory (NEO-PI, Costa & McCrae, 1985) was administered. This consists of a 5-point Likert-type scale for 60 items reflecting five traits, with a mean score calculated based on 12 items per trait: Openness to Experience ($\alpha=0.69$), Conscientiousness ($\alpha=.79$), Neuroticism ($\alpha=.83$), Agreeableness ($\alpha=.62$), and Extraversion ($\alpha=.69$).

(ii) **Psychological Well-being.** This was measured using a short version of the Ryff Inventory (Ryff & Keyes, 1995) that was translated into German. Participants rated the degree to which 18 items described them on a five-point Likert-type scale, and a mean was calculated for each of the six dimensions. The measure includes 3 items for each of Ryff’s dimensions of PWB: Autonomy ($\alpha=.47$), Environmental Mastery ($\alpha=.45$), Personal Growth ($\alpha=.51$), Positive Relations ($\alpha=.39$), Purpose in Life ($\alpha=.41$), and Self-Acceptance ($\alpha=.65$). The six Ryff dimensions measured with three-item scales tend to show lower internal consistency than other scales: this is to be expected when the items included were selected to capture the broad range of theoretical aspects covered in each dimension (Ryff et al., 2012). A high score on each dimension is indicative of positive functioning in that domain.
Validation measures. (i) Life Satisfaction. Two items addressed satisfaction, the first asking participants to rate their satisfaction with life at present, and the second asking participants to rate their satisfaction with life up till now, both on five point Likert-type scales, with 1 indicating ‘very satisfied’ and 5 indicating ‘not satisfied’. The Pearson correlation for answers to the two items was $r=.52$ ($p < .001$) and the mean of the two items was used as a measure of subjective well-being, reverse scored for ease of interpretation such that higher scores indicate more satisfaction ($M=3.77$).

(ii) Wisdom-related Performance. The Berlin Paradigm for assessing wisdom involves a two-stage process: firstly, data are collected using the Berlin Wisdom Interview, and secondly, laypeople who have been trained as raters evaluate the protocols from the interview. In the Berlin Wisdom Interview, participants are trained to respond out loud to a question relating to a dilemma or situation and checks are made for comprehension and discomfort. Some of the situations presented to the adolescents (see Table 15) were altered from the original versions to make them more age-relevant by specifying that the protagonist in the dilemma is a teenager. Responses from the Berlin Wisdom Interview were tape-recorded and transcribed with alterations to ensure the age of the participant was not present in the transcription. The protocols produced were then rated by 10 trained laypeople who were paid the equivalent of approximately 2000 Euros to rate all 1,242 protocols (6 each for the 146 adolescents and an additional 61 adults included for comparison in other studies: see Pasupathi et al., 2001) over 12 weeks. According to the Berlin Paradigm, responses are rated against five criteria: Rich factual knowledge, Rich procedural knowledge, Lifespan contextualism, Relativism of values and life priorities, and Recognition and management of uncertainty. Two raters are randomly assigned to each of the five wisdom criteria and rate each of the protocols only according to its performance against this one criterion on a scale from 1 to 7. Each pair of raters’ criterion scores are averaged for each of the 6 tasks, resulting in
in 30 scores per participant. In this study, inter-rater reliability was high for individual
criteria, ranging between .71 and .87 (Mean = 0.79, SD = 0.04). The mean score for the five criteria is
referred to as the participant’s wisdom-related performance score (WRP); within the Berlin
Paradigm, wisdom itself is a term used only to refer to the highest levels of performance,

Table 14. *Wisdom-Related Dilemmas from the Berlin Wisdom Interview*

<table>
<thead>
<tr>
<th>Dilemma label</th>
<th>Dilemma text (translated from German)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adolescent dilemmas</strong></td>
<td></td>
</tr>
<tr>
<td>Sexual experience</td>
<td>A teenager has the feeling that he or she has less sexual experience than his or her friends, and this concerns him or her. What could one or the teenager do and think in such a situation?</td>
</tr>
<tr>
<td>Test</td>
<td>A teenager learns that he or she has failed a test that is very important for his or her future. What could one or the teenager do and think in such a situation?</td>
</tr>
<tr>
<td>Friends’ plans</td>
<td>A teenager realizes that he or she is no longer being included in his or her friends’ plans. What could one or the teenager do and think in such a situation?</td>
</tr>
<tr>
<td>Divorce</td>
<td>A teenager learns that his or her parents want to divorce. What could one or the teenager do and think in such a situation?</td>
</tr>
<tr>
<td><strong>Adult dilemmas</strong></td>
<td></td>
</tr>
<tr>
<td>Suicide</td>
<td>Someone gets a telephone call from a good friend who says he can’t go on, that he wants to commit suicide. What could one or the person do and think in such a situation?</td>
</tr>
<tr>
<td>Meaning of Life</td>
<td>In thinking over his or her life, a person realizes that he or she has not achieved all he or she once imagined. What could one or the person do and think in such a situation?</td>
</tr>
</tbody>
</table>
Note: Adapted from Pasupathi et al. (2001)

while WRP covers the full range of scores. Inter-rater reliability for the overall WRP scores of the 146 adolescents had a Cronbach’s alpha of .99⁷.

Analytic Strategy

We tested our hypotheses regarding the factor structure of adolescent personality growth and adjustment, using a structural equation modelling framework. In a first phase, we ran EFAs to determine an appropriate number of factors to submit to further testing, then, using AMOS.22 (Arbuckle, 2013), took a hierarchical nested modelling approach to test and then refine the model according to modification indices. In a final phase, to validate the model, we added WRP and Life Satisfaction as predictors of the latent factors.

Results

We report first on the outcome of the CFA approach to testing the fit of a growth and adjustment personality framework. Following this, we report the results of adding life satisfaction and wisdom-related performance variables to the model as predictors of the latent factors. We then discuss the results briefly, with general discussion following Study 4.

Can Personality Adjustment and Growth Factors Be Identified in Adolescence?

After an exploratory factor analysis with accompanying parallel analysis suggested a three-factor solution, confirmatory factor analysis (CFA) was carried out using a hierarchical nested modeling approach. Four models were tested: Model 1 was specified by three factors with only single loadings such that the Personality Adjustment factor consisted of

⁷ See Pasupathi, Staudinger and Baltes (2001) and Staudinger and Pasupathi (2003)
Environmental Mastery, Self-acceptance and Neuroticism, the *Personality Growth* factor consisted of Personal Growth, Purpose in Life, Autonomy, Openness to Experience, and Conscientiousness, and a *Social Competence* factor consisted of Extraversion, Positive Relations with others, and Agreeableness. For model identification purposes, one error covariance was added between Autonomy and Agreeableness. Model 2 was identical, with one additional parameter, an additional negative loading of Openness to Experience onto Personality Adjustment. Model 3 was identical to Model 1 but with an additional loading of Conscientiousness onto Personality Growth. Model 4 was identical to Model 3 but with Openness to Experience loading positively onto Personality Growth and negatively onto Personality Adjustment. See Table 16 for details of model fit. Goodness of fit was assessed with a $\chi^2$ test, root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), Goodness of Fit Index (GFI), and Comparative Fit Index (CFI), and further comparisons were made using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). Model 3, with only Conscientiousness loading onto two factors, had adequate fit, $\chi^2 (39, N=146) = 54.30, p=.05; \text{RMSEA}=.05; \text{SRMR}=.07, \text{CFI}=.94$. Adding the double loading of Openness to Experience in Model 4 resulted in significant increase in $\chi^2$ and the model achieved good fit overall, $\chi^2(38, N=146) = 46.38, p=.165; \text{RMSEA}=.04; \text{SRMR}=.06, \text{CFI}=.967$. The coefficients for Model 4 are presented in Figure 8. All factor loadings in this model were significant, as were covariances, with the exception of that between Personality Growth and Social Competence. Bivariate correlations and descriptive statistics for relevant variables are presented in Table 17.
Table 15. Results of Confirmatory Factor Analyses

<table>
<thead>
<tr>
<th>Model</th>
<th>CMIN</th>
<th>p</th>
<th>χ² change</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>pclose</th>
<th>AIC</th>
<th>BIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>66.83</td>
<td>.005</td>
<td></td>
<td>.93</td>
<td>.88</td>
<td>.90</td>
<td>.07</td>
<td>.15</td>
<td>118.83</td>
<td>196.40</td>
</tr>
<tr>
<td>2</td>
<td>55.96</td>
<td>.038</td>
<td>10.87**</td>
<td>.94</td>
<td>.89</td>
<td>.93</td>
<td>.06</td>
<td>.38</td>
<td>109.96</td>
<td>190.52</td>
</tr>
<tr>
<td>3</td>
<td>54.3</td>
<td>.053</td>
<td>12.53**</td>
<td>.94</td>
<td>.90</td>
<td>.94</td>
<td>.05</td>
<td>.43</td>
<td>108.30</td>
<td>188.85</td>
</tr>
<tr>
<td>4</td>
<td>46.38</td>
<td>.165</td>
<td>7.92*</td>
<td>.95</td>
<td>.91</td>
<td>.97</td>
<td>.04</td>
<td>.66</td>
<td>102.38</td>
<td>185.92</td>
</tr>
</tbody>
</table>

Note. *p<.01, **p<.001

Table 16. Bivariate Relationships and Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td>16.8</td>
<td>1.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Life Satisfaction</td>
<td>- .08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.78</td>
<td>0.73</td>
</tr>
<tr>
<td>2. WRP</td>
<td>.45**</td>
<td>-.07</td>
<td></td>
<td></td>
<td></td>
<td>2.97</td>
<td>0.83</td>
</tr>
<tr>
<td>3. Personality Adjustment</td>
<td>.03</td>
<td>.46**</td>
<td>-.10</td>
<td></td>
<td></td>
<td>2.02</td>
<td>0.42</td>
</tr>
<tr>
<td>4. Personality Growth</td>
<td>.24*</td>
<td>.11</td>
<td>.36*</td>
<td>.33**</td>
<td></td>
<td>3.13</td>
<td>0.41</td>
</tr>
<tr>
<td>5. Social Competence</td>
<td>-.10</td>
<td>.30**</td>
<td>-.03</td>
<td>.43**</td>
<td>.28*</td>
<td>1.46</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Note: *p<0.01 **p<0.001
Validation of Personality Adjustment and Personality

In a final step, Life Satisfaction and WRP were added to the model as predictors of the three latent personality factors (see Figure 9). Fit of this model was good $\chi^2(54, N=146) = 58.38$, $p=.318; \text{RMSEA}=.02; \text{SRMR}=.05; \text{CFI}=.986)$. In line with expectations, WRP was a significant predictor of Personality Growth ($\beta=.47, p<.001$) and Life Satisfaction was a significant predictor of Personality Adjustment ($\beta=.51, p<.001$). Of the other new parameters in the model, only the regression of the latent Social Competence factor on Life Satisfaction was significant ($\beta=.32, p<.01$).
Discussion Study 3

The first purpose of Study 3 was to test whether latent Personality Adjustment and Personality Growth factors are present in an adolescent sample; and if so, the second purpose was to validate the distinction by adding WRP and Life Satisfaction to the model as predictors of the latent variables. As hypothesized, we replicated the Personality Adjustment and Personality Growth factors (cf. Wink & Staudinger, 2016) with three important qualifications. Firstly, a three-factor model, including an additional Social Competence factor, showed the best fit of the models tested. The Social Competence and Personality Adjustment factors were significantly correlated, as were Personality Adjustment and Growth. Secondly, the Social Competence factor was indicated by Extraversion, which was
not included in the adult version of the model, as well as Positive Relations with Others and Agreeableness, which we had initially expected to load positively onto the Personality Adjustment factor. Thirdly, there were two double-loadings as expected: Conscientiousness loaded positively onto both Personality Adjustment and Personality Growth, and Openness to Experience loaded positively onto Personality Growth and negatively onto Personality Adjustment.

**Personality Adjustment and Growth in Adolescence**

The finding that a three factor model consisting of Personality Adjustment, Personality Growth, and Social Competence offered best fit suggests that in adolescence, personality development occurs in three separate personality areas, with Personality Adjustment focused primarily on mastery and self-acceptance, Personality Growth focused primarily on personal growth, meaning in life, and openness to new experience, and Social Competence focused on warm social interactions with others.

That the Personality Adjustment and Growth factors are related to each other is not surprising in light of previous findings (cf. Staudinger & Kunzmann, 2005; Wink & Staudinger, 2016), and it is similarly unsurprising that development focused on the self (growth) is unrelated to development favoring interactions with others, as reflected in lack of a relationship between Personality Growth and Social Competence. The inclusion of Extraversion in our CFA model was a departure from previous research on growth and adjustment. We suggest that its inclusion in the factor analysis allowed the other-related indicators, Agreeableness and Positive Relations with Others, to be drawn away from Personality Adjustment and Personality Growth, perhaps reducing adjustment and growth in adolescence to their core features of mastery/competence and growth respectively, and allowing the Social Competence factor to emerge. That Agreeableness and Positive Relations with Others did not significantly load onto our Personality Adjustment factor is an indication
that during adolescence, developing and maintaining warm relationships with others is not necessarily facilitative nor prohibitive of mastery over developmental tasks. It may be the case that these two factors represent other-directed (Social Competence) and personal (Personality Adjustment) facets of adjustment observed in adults, that are more distinct among adolescents than adults. This idea is discussed in relation to Study 4 below.

Our initial predictions regarding the indicators of Personality Adjustment were otherwise supported: Environmental Mastery, Self-acceptance and low levels of Neuroticism were all expected to load onto the Personality Adjustment factor, while Personal Growth, Purpose in Life, Openness to Experience and Conscientiousness all loaded onto the Personality Growth factor. Our prediction that Conscientiousness would load onto both Personality Adjustment and Personality Growth was supported, from which we infer that during adolescence, conscientiousness is a driver of developmental progress whether it is towards one’s goals for personal growth or towards prescribed socialization in preparation for an adult role. The small negative loading of Openness to Experience onto the Personality Adjustment factor is another point of difference from the adult model. It is not, however, surprising: higher levels of adjustment can be achieved with very low levels of openness to experience, as has been described in the identity literature (e.g., Luyckx et al., 2008): while identity exploration is expected, it is possible to accept an identity without exploration, and it is typical of those who prefer conservation and tradition over novelty to do so (Helson & Srivastava, 2001). In this sense, personality adjustment in adolescence does not exclusively reflect the ideal completion of adolescent developmental tasks: personality growth is also required in this phase of life. It seems likely that in an adolescent sample, the benefits of low levels of openness for adjustment outweigh the potential threats to wellbeing that may emerge later. As socially prescribed developmental tasks require less growth later, it seems that elements of Social Competence, such as the dominance facet of extraversion, become
more associated with personality adjustment than during adolescence. This is discussed further in the general discussion.

Validating the Adjustment/Growth Paradigm in an Adolescent Sample

There was strong support for our hypotheses regarding markers of both Personality Growth and Personality Adjustment. Life satisfaction was associated with Personality Adjustment and WRP was related with our Personality Growth factor. Although we considered the possibility of a third factor emerging, we made no hypotheses about its associations with the two validating constructs, but found that Life Satisfaction was also a predictor of the Social Competence factor. Taken together, this offers first evidence that adjustment is not only structurally present in an adolescence, but that it is a trajectory characterized by a tendency towards both the maintenance of well-being and the achievement of age-related developmental tasks as set by society. That our Personality Growth factor was not predicted by levels of Life Satisfaction is important in validating it as a distinct form of positive personality development in adolescence. The finding that of our latent personality factors, only Personality Growth is predicted by WRP, as predicted, reinforces the validity of the distinction. This finding is encouraging in light of previous research on wisdom-related performance in adults and adolescents, certainly offering further support for the notion that the seeds of wisdom can be found in adolescence (cf. Pasupathi et al., 2001).

While we have therefore established that the distinction between growth and adjustment appears to be viable in adolescence, we acknowledge the obvious limitation that, despite rigorous sampling procedures, the adolescents in Study 3 were all German and spoke German as a native language. Also, we were interested whether the finding may be linked with the fact that we used a psychometric approach to assessing personality, in the form of self-report inventories. These two matters were addressed by attempting to apply the same
factor structure, albeit using a different measurement approach and a sample of U.S.
adolescents in Study 4.

**Study 4**

Having established a 3-factor model in Study 3, we attempted to apply this model in
another adolescent sample, using the late adolescence wave of the longitudinal dataset held
by the IHD at University of California, Berkeley. The approach in Study 4 differs from that
of Study 3 in two main ways. Firstly, the sample is substantially different. Secondly, the data
consist of ratings from observer-based Q-sort profiles of participants. The intent in Study 4 is
therefore not an exact replication but rather to test the transferability of the 3-factor model
from Study 3 to a different context. Direct, unaltered transfer under these circumstances was
not expected, and while differences between model fits in each of the samples might easily be
attributable to cohort or methodological differences, similarities can offer quite strong
support for the findings of Study 3 being applicable across measures, time and continents.

**Method**

**Participants**

Our data came from two studies that were initiated in the San Francisco area in the
1920s. Known as the Berkeley Guidance Study (GS) and Oakland Growth Study (OGS), the
studies were merged into a single dataset by Jack Block in the 1960s, at which point
information collected from medical examinations, interviews, psychological tests and
behavioral observations was used to create a case file for each participant. For information
about participants and measures originally used, see Block and Haan (1971) and Eichorn
(1981). The different studies had different aims, and the OGS participants were born on
average 7 years earlier than BGS participants, effectively creating two cohorts within the
single dataset. However, because the Q sorts were carried out using interview data after the
two studies were merged, there are no differences in the form of the data for the two cohorts and they are frequently studied as a single sample (e.g., Wink, Ciciolla, Dillon, & Tracy, 2007). Study 4 involves all 203 participants from both studies for whom Q-sort data was available based on the interviews at approximately age 18. Participants were predominantly white, with above average family income levels, and were considered representative of the San Francisco Bay area population of the time.

**Q-sort scales for Personality Growth and Adjustment**

The California Q-sort used to rate adolescents consisted of 100 items (see Block & Haan, 1971 for more information). Using all available data from each participant, raters were asked to consider each item and place it, relative to other items, in a forced distribution into one of 9 places, such that only 5 items could be indicated as most like the person, and 5 items as least like the person, the other items falling between, according to a normal distribution. When inter-rater agreement on item placement was below .45, additional raters were consulted. The dataset therefore includes a score for each participant for each item, which represents the mean rating across raters, multiplied by ten for ease of interpretation: this means that the maximum score for any item is 90 and the minimum is 10.

In a previous study (Law et al., 2018a), following an established procedure to create measures from Q-sort data (e.g., Mallory, 1989; Peterson & Klohnen, 1995) we asked experts to carry out a Q-sort using the 104-item adult version of the California Q-sort (see Block & Haan, 1971), rating an imagined person high in personality growth, and separately a person high in personality adjustment. We used the adult version of the Q-sort to facilitate longitudinal analysis through the adult waves, initially creating scales from the 13 items with the highest mean rating across experts for personality growth and adjustment separately. We removed items that showed insufficient reliability, or that were not present in the adolescent version of the Q-Sort. This resulted in no changes to the 13-item scale for personality.
adjustment. After removing personality growth items that were not present in the adolescent data, we had 11 items, from which we deleted one further item to improve reliability. *Tends to be rebellious and non-conforming.* Reliability for these scales was good: for both adjustment and growth, Cronbach’s α=.85. See Tables 18 and 19 for a list of items relevant for each construct.

**Analytic Strategy**

As mentioned above, the Q-sort scales for Personality Adjustment and Growth were initially obtained as part of a larger investigation into the longitudinal invariance of measures. In the present study, our aim was to confirm the 3-factor structure from Study 3 using a CFA approach. The latent Personality Growth factor was therefore indicated by all available growth items. We then needed to determine which Adjustment items should load onto the Social Competence factor, and which items should load onto the Personality Adjustment factor. Consulting EFAs, we decided to incorporate the suggestion from Study 3 that the Social Competence factor is other-directed, while the Personality Adjustment factor is more intrapersonal, and distributed the Adjustment items following the model established in the adult waves, aligning the adolescent Social Competence factor with the adult *Interpersonal Warmth* factor, and the Adjustment factor with the adult *Dependability* factor. Modification indices were finally consulted to improve the model: items were allowed to cross-load when theoretically justifiable or conceptually similar to cross-loadings in Study 3.
Table 17. Items Most Characteristic of Adjustment

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>35</td>
<td>Has warmth; has the capacity for close relationships; compassionate.</td>
</tr>
<tr>
<td>9</td>
<td>26</td>
<td>Is productive, gets things done.</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>Is dependable and responsible.</td>
</tr>
<tr>
<td>9</td>
<td>84</td>
<td>Is cheerful, happy.</td>
</tr>
<tr>
<td>9</td>
<td>74</td>
<td>Feels satisfied with self</td>
</tr>
<tr>
<td>8</td>
<td>17</td>
<td>Behaves in a sympathetic and considerate manner.</td>
</tr>
<tr>
<td>8</td>
<td>32</td>
<td>Seems to be aware of the impression s/he makes on others.</td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td>Is protective of those close to him/her.</td>
</tr>
<tr>
<td>8</td>
<td>28</td>
<td>Tends to arouse liking and acceptance in people.</td>
</tr>
<tr>
<td>8</td>
<td>75</td>
<td>Has a clear-cut, internally consistent personality</td>
</tr>
<tr>
<td>8</td>
<td>63</td>
<td>Judges self and others in conventional terms like &quot;popularity&quot;</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>Favors conservative values in a variety of areas;</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>Is uncomfortable with uncertainty and complexity</td>
</tr>
</tbody>
</table>
### Table 18. *Items Most Characteristic of Growth*

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>60</td>
<td>Has insight into and understands own needs, motives, behavior;</td>
</tr>
<tr>
<td>9</td>
<td>16</td>
<td>Is introspective; thinks about self; examines own thoughts and feelings.</td>
</tr>
<tr>
<td>9</td>
<td>90</td>
<td>Is concerned with philosophical problems, e.g., religions, values, free will.</td>
</tr>
<tr>
<td>9</td>
<td>96</td>
<td>Values own independence and autonomy</td>
</tr>
<tr>
<td>9</td>
<td>39</td>
<td>Thinks and associates to ideas in unusual ways.</td>
</tr>
<tr>
<td>8</td>
<td>70&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Behaves ethically; has a personal value system and is faithful to it.</td>
</tr>
<tr>
<td>8</td>
<td>83&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Able to see to the heart of important problems.</td>
</tr>
<tr>
<td>8</td>
<td>71</td>
<td>Has high aspiration level for self; is ambitious; sets high personal goals.</td>
</tr>
<tr>
<td>8</td>
<td>66</td>
<td>Enjoys aesthetic impressions; is aesthetically sensitive.</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>Has a wide range of interests (regardless of how deep or superficial)</td>
</tr>
<tr>
<td>8</td>
<td>51</td>
<td>Places high value on intellectual and cognitive matters (does not imply ability).</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Is critical, skeptical, not easily impressed.</td>
</tr>
<tr>
<td>8</td>
<td>62&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Tends to be rebellious and non-conforming.</td>
</tr>
</tbody>
</table>

*Notes:* <sup>1</sup>item not present in adolescent Q-sort. <sup>2</sup>item removed due to poor item-total reliability.
Results

The initial three-factor model without cross-loadings, as specified above, did not reach acceptable fit, $\chi^2 (163, N=203)=405.34, p<.0001; \text{CFI}=.918; \text{RMSEA}=.086, p<.0001; \text{SRMR}=.13$. Good fit was obtained, $\chi^2 (171, N=203)=296.60, p<0.0001, \text{CFI}=.958; \text{RMSEA}=.06, p=.07; \text{SRMR}=.08$, when the Growth item *Insightful* was allowed to load positively onto the Social Competence factor and *Skeptical* negatively. In addition, *Cheerful* was moved from Personality Adjustment to Social Competence, and *Favors status quo* was allowed to load positively on Personality Adjustment in addition to its initial negative loading on Personality Growth. This model is displayed in Figure 10. All three latent factors were positively correlated with each other: Personality Adjustment with Social Competence most strongly $r = .76 (p<0.001)$, Personality Adjustment with Personality Growth $r = .36 (p<0.001)$, and Personality Growth with Social Competence $r = .20 (p<.05)$.

![Figure 9. Standardized three factor solution for Study 4](image-url)
Discussion Study 4

Using items selected by experts as highly indicative of personality growth and adjustment in a previous investigation (Law et al., 2018a), we tested the viability of a model consisting of latent Personality Growth and Personality Adjustment factors with a third factor, now labeled as Social Competence. With modifications, the 3-factor model showed good fit and is taken as further evidence for the validity of the distinction between growth and adjustment as two positive, personality-related constructs in adolescence. The replication of the third factor confirms the structure identified in Study 3, providing strong support for our proposition that the Social Competence factor is conceptually related to adjustment but is distinct in adolescence. Although in Study 4 the relationships between all latent factors were stronger, their strength relative to each other is similar: the strongest association in both studies was between Personality Adjustment and Social Competence, and the weakest between Personality Growth and Social Competence. The successful transfer of the three factor model also sheds further light on the nature of the difference between Social Competence and Personality Adjustment in adolescence, in that what we had labelled Social Competence is indeed indicated by characteristics typically descriptive of interpersonal relations, e.g., warm, protective, cheerful. In addition, the loading of the more cognitive element of insight suggests links with the development of theory of mind and empathy. Personality Adjustment, on the other hand, is mostly intrapersonal, dominated by characteristics such as dependability that have social value in adult roles. Below we discuss findings from both studies relating to each of the three factors.

General Discussion

We aimed to determine whether personality adjustment and growth are constructs that are also useful for describing personality maturation in adolescence, firstly by establishing a
factor structure in adolescence using personality characteristics previously found to indicate latent Personality Adjustment and Growth factors, and then by demonstrating the convergent and divergent validity of these adolescent factors. Having established the validity of the distinction between personality adjustment and growth in Study 3, we then aimed to replicate these findings by testing the model using a second sample in Study 4. Despite large measurement, historical and geographical differences between the two data sets, we identified a highly similar factor structure consisting of three factors describing personality maturation in adolescence, lending strong support to the initial findings.

**Personality Adjustment**

Personality Adjustment in Study 3 was indicated by high levels of *Environmental Mastery, Conscientiousness*, which also loaded on Personality Growth, and *Self-Acceptance*, and low levels of *Openness to Experience* and *Neuroticism*. The same factor in Study 4 was indicated most strongly by *Dependable* and *Feels satisfied with self*. It is plausible that the double loading of Conscientiousness in Study 3 on both Personality Adjustment and Personality Growth is directly paralleled in Study 4 by the loading of *Dependable* on Personality Adjustment and *High Aspiration for Self* on Personality Growth: these two items are similar to the dependability and ambition/drive facets of conscientiousness (e.g., Jackson et al., 1996). We therefore suggest that adolescent personality adjustment is indicated by high levels of dependability, and personality growth by high levels of ambition/drive, and these elements draw the overall trait of conscientiousness to both dimensions of personality maturation in adolescence.

The negative loading of *Openness to Experience* on the Personality Adjustment factor in Study 3 has an analog in the positive loading of *Favors Status Quo* in Study 4: it suggests that high levels of personality adjustment in adolescence involve a preference for stability over change or exploration. This may echo findings from adolescent identity development.
research: reflective and explorative thinking can result in anxiety, and therefore can be threatening to the development of a productive and competent self. As a solution, the option of adopting roles without exploring is available for those who favor conservation and tradition over novelty and challenge (Luyckx et al., 2006). Thus, personality adjustment, in the sense of timely resolution of developmental tasks, may, at least in adolescence, be both a means to avoid the pitfalls of introspection and the result of doing so. The relationship between adolescent personality adjustment and identity development is certainly worth further attention.

Including extraversion in the analysis in Study 3 led some of the adult adjustment indicators to load onto a separate, Social Competence factor. Inspecting the Social Competence factor in Study 4 is informative in that regard as individual items form the indicators in this study. The Personality Adjustment factor contains items reflective of the development of intrapersonal characteristics (e.g., dependability), while the Social Competence factor seems to be more other-directed (e.g., warmth).

**Personality Growth**

In Study 3, the Personality Growth factor was indicated by high levels of *Openness to Experience*, *Personal Growth*, and *Purpose in Life*, with a smaller loading of *Autonomy*. In Study 4, the Personality Growth factor showed an analogous pattern: all of the 11 Q-sort items selected as indicative of personality growth loaded positively onto the Personality Growth factor. In addition, three items that represent something like an ‘anti-growth’ component of personality adjustment, such as *Favors Status Quo*, *Thinks in Conventional Terms* and *Uncomfortable with Uncertainty*, all loaded negatively onto the Personality Growth factor. We therefore find support for an understanding of personality growth in adolescence that involves an open-minded appreciation of uncertainty and the desire to
explore different activities and roles. At the same time, those high in personality growth gain a sense of wellbeing from feeling independent and engaging in reflective thought.

With the confirmation that personality growth is a construct applicable to adolescent samples, it may be important to establish links with other adolescent-relevant constructs. For example, further research could address associations between personality growth and identity moratorium (Marcia, 1966) and the identity process of exploration (see Klimstra, Luyckx, Goossens, Teppers, & De Fruyt, 2013). The association of personality growth with other characteristics should also be explored longitudinally: for example, do levels of growth in adolescence represent a stable characteristic of individuals, and does the relationship with wisdom hold longitudinally? Also, because personality growth and adjustment can co-exist in individuals, the interplay between them should be explored. For example, do intrapersonal differences in growth and adjustment hold over time, or is a certain level of adjustment in adolescence necessary to facilitate the higher levels of growth associated with later life wisdom? A separate set of questions concerns antecedents of growth, for example, whether family contexts, biological factors, or education play a role in promoting growth.

Social Competence

In both studies we found that a third factor was necessary to adequately capture personality maturation in adolescence. In Study 3, we suggested that this factor may represent a facet of adjustment that reflects personality maturation towards better linking with others. In contrast, the Personality Adjustment factor captures personal qualities that are favorable for mastering developmental tasks. The items indicative of Social Competence are Extraversion, Positive Relations with Others, and Agreeableness. Similarly, in Study 4, the most indicative items were Warm, Protective, and Arouses Liking. Further clarification of the meaning of this latent factor is provided when attending to the modifications needed: adding a negative loading for Skeptical was necessary, which is similar to a lack of mistrust or
suspiciousness, and reflective of the trust facet of agreeableness (Costa et al., 1991). We therefore suggest that this represents an uncritical side to Social Competence that distinguishes it from other markers of maturity, in particular, personality growth. High levels of Social Competence may, for example, be conceptually similar to high levels of identity foreclosure, indicating a preference for social acceptance rather than exploration and realization of the self (Marcia, 1966). Alternatively, this may be similar to the dimension of commitment to identity, indicating that decisions have been made and steps taken toward establishing roles (Klimstra et al., 2013). The addition of Insightful to the Social Competence factor suggests that while those who have high levels of Social Competence may be uncritical (i.e., not skeptical), they still have insight into their own needs and motives as well as those of others. As such, it may be that this kind of insight is reflective of the development of theory of mind, and psychological mindedness, and differences in levels may be related to social cognitive and neural changes within the individual during adolescence or pre-adolescence, that affect the ability to relate socially (see Blakemore & Choudhury, 2006; Bosacki & Wilde Astington, 1999). Further research is needed to determine more clearly what relation this factor has with Personality Adjustment by investigating relationships with other criterion measures. In the adult model of personality adjustment, this social factor seems to be subsumed under the Adjustment factor (Law et al., 2018a). It is plausible that a distinct Social Competence factor may be an adolescent-specific feature of the model rather than simply a methodological artifact based on the inclusion of extraversion, but the present study is in no position to test that. Including extraversion in Study 3 was necessary because the trajectories of the extraversion facets, vitality and dominance, both show increases during adolescence, whereas both facets have yielded inconsistent and differential change patterns during adulthood. Mean levels of the dominance facet continue increase during adulthood, and it has been considered part of the maturity principle (Roberts et al., 2006). It is possible
that our Social Competence factor is related to that dominance facet: it may be a pre-adult feature of personality similar to *surgency*, which describes the dominant, outgoing character of children and adolescents who are not socially withdrawn and who achieve high levels of social competence in adulthood (Shiner, Masten & Roberts, 2003). Thus, it may be that while increasing social competence is an important task in its own right in adolescence, the skills developed are recruited in adulthood as part of personality adjustment, in support of more complex tasks such as establishing oneself in new and unfamiliar social groups, building romantic relationships, and managing impressions in new work contexts.

**Limitations and Further Research**

Without doubt, the successful transfer of the model from one sample to the other is strong evidence for the validity of the distinction between personality adjustment and growth in adolescence, but there are three clear limitations across the two studies in this paper. Firstly, the difference in methods and samples, which made transfer between the two samples more challenging and less likely to succeed, at the same time also prevented a clear, more unified picture of what contributes to personality growth and in adolescence. Future studies should clarify the relationships between personality growth and adjustment and other adolescent-relevant constructs like identity, as well as possible distinctions between adolescent and adult social competence. It would be ideal now for results to be confirmed from either one of the studies using the same method in a stricter replication to build a more cohesive model that integrates the findings from the two studies described here. Secondly, each of the samples may have been subject to historical and cultural influences. Although the transfer between samples from different continents and cohorts buffers against the severity of this problem, with their adolescence occurring more than 40 years apart, it may be the case that the differences between them are smaller than the similarities they share as 20th Century samples. Perhaps differences would emerge in a more recent sample, for example because of
changes in the availability or use of technology and social media. Thirdly, none of the studies measured personality adjustment and growth directly. Relying on latent constructs is the most appropriate at present as no direct measures of personality adjustment and growth are yet available, but constructing unique self-report inventories for the factors found in these studies, Personality Adjustment, Personality Growth, and Social Competence, may facilitate further research. For example, this would be useful to test the propositions about the transition between adolescence and adulthood in terms of the three factors: that Social Competence becomes part of Personality Adjustment after adolescence, that openness becomes unrelated to Personality Adjustment and conscientiousness becomes less related to Personality Growth over time.

**Conclusion**

In this paper, we have presented the results of two studies that together demonstrate three major findings. Firstly, we have provided strong support for the validity of a distinction between personality growth and adjustment in adolescence. Secondly, we have identified a distinction between Social Competence and Personality Adjustment, the former involving uncritical preference for positive social relationships, and the latter associated with a sense of mastery as a well-functioning person. Thirdly, we found that unlike in adulthood, adolescent growth is characterized by high levels of conscientiousness, and propose that this reflects the importance of aspiration and drive as mechanisms for self-development during adolescence, a time when a certain amount of self-development and exploration are expected. We recommend further research into personality growth and adjustment in adolescence, particularly as they relate to identity development, and also suggest the need for longitudinal research to help determine stability and change in levels of adolescent growth and adjustment from adolescence into adulthood.
Notes

1 This study was carried out as part of a larger project and the sample has been described previously in Pasupathi, Staudinger and Baltes (2001) and Staudinger and Pasupathi (2003).

2 See Pasupathi, Staudinger and Baltes (2001) and Staudinger and Pasupathi (2003)
IX. DISCUSSION AND CONCLUSIONS

Four aims were identified in the general introduction. The primary aim was to test relationships between personality growth, personality adjustment, and wisdom, both cross-sectionally and longitudinally, with the explicit intention of carrying out the first longitudinal investigation of whether, and if so how, personality maturation towards growth and adjustment are antecedents of later life wisdom. Three subsidiary aims were ancillary to the primary aim: the first subsidiary aim was to review literature relating to personality adjustment and growth and this aim is not addressed below. The second subsidiary aim was to create scales for personality adjustment and growth. This entailed creating prototypes from Q-sort items and was followed by testing the validity of the constructs throughout adulthood, determining latent trajectories of personality adjustment and growth during adulthood. The third subsidiary aim was to test the applicability of the constructs to adolescent samples. Below, findings from the three empirical papers are summarized, first dealing with findings relating to the new scales and validation across adulthood and in adolescence, then in terms of longitudinal associations. A general discussion follows, organized according to two themes: mastering and transcending the given across the lifespan; and positive personality development is a seed of wisdom.

Review of Findings

Personality Adjustment and Growth: A Distinction Relevant in Adulthood, Adolescence and Late Adulthood

Q-sort scales for Personality Growth and Adjustment confirm the distinction. In Study 1, we sought expert ratings to identify Q-sort items that could be used to construct scales to measure personality growth and adjustment. There was sufficient agreement on items among experts to construct scales, which was crucial in facilitating the other goals of
IX. DISCUSSION AND CONCLUSIONS

the empirical work. The alpha reliabilities for scales including all 13 items showed insufficient consistency between expert ratings and the data when applied at each of the different waves of the IHD dataset: the removal of at least one item per scale was necessary when we used the scale at the late adulthood timepoint. In addition, the tests for configural invariance demonstrated that despite expert agreement, the items selected were better represented in latent space by more than one factor each, and shared an inconsistent pattern of relations with those latent factors at the different timepoints available. Thus, Study 1 revealed a clear tension between the aims for the scale constructed, which were to demonstrate its validity at late adulthood, and to demonstrate at least partial measurement invariance across adulthood so that the scale could be used longitudinally in Study 2. We were able to achieve both aims: Personality Adjustment and Personality Growth factors were identified at each timepoint. Personality Adjustment was found to consist of Interpersonal Warmth and Dependability subfactors, while Personality Growth included factors labelled Thoughtfulness, Transcending the Given, and Ethics/Insight. While the pattern of interrelations between factors varies slightly across the different phases of life, there is partial measurement invariance for the scales. Although we were indeed able to achieve both aims and now have confidence that discussing personality development in terms of adjustment and growth is valid and useful, as with many other personality constructs caution should be exercised when comparing personality adjustment and growth at different stages of development (Jackson et al., 2009; Slobodskaya, 2011; Soto & Tackett, 2015).

Adolescent-specific features of Personality Adjustment and Personality Growth.

This need for caution is more starkly demonstrated in the findings from Chapter 8, which showed again that a distinction between personality growth and adjustment was valid and useful, this time in adolescence, with the main finding that Personality Adjustment and Growth factors were present and mostly indexed as expected (i.e., according to Wink &
IX. DISCUSSION AND CONCLUSIONS

Staudinger, 2016) but which showed that a third latent factor, which we labelled Social Competence, was present beside the two we were testing for. The acceptability of this label was improved when the three-factor model was confirmed across samples in Study 4. Despite the obvious dissimilarity between a group of Germans who were adolescents in the former East Germany in the late 1980s and early 1990s and a group of Americans who were adolescents in San Francisco in the late 1930s and early 1940s, and despite the apparent dissimilarity of the different measurement paradigms, including the use of performance and self-report measures in one, and expert ratings in the other, there was remarkable similarity in the content of the three factors identified in each case. Clearly the differences in measures and samples place substantial limitations on what can be claimed in terms of the equivalence of the parameters involved, but there is certainly face validity in a comparison of the substantive meanings of the latent Personality Adjustment, Personality Growth, and Social Competence factors based on the items that indicate them.

The difference in factor structure presents a difficulty in longitudinal comparisons between adolescence and adulthood, because at first it appears that there is not even continuity of factors across the transition. Looking at the results of Study 4 and Study 1 together gives some clues as to what occurs between adolescence and adulthood. This was uniquely possible because of the Q-sort data provided by participants in the IHD sample: although there were some differences in the items used in each Q-sort, our final scales contained only items that were present in both. With two exceptions, those items that indicated the Social Competence factor in Study 4 can be found as indicators of personality adjustment in the set of core items submitted to tests of measurement invariance in Study 1. Of the exceptions, Skeptical was withdrawn because it loaded inconsistently on the factors of the personality growth factor across timepoints, and Insightful was an indicator of personality
growth at all adult timepoints. These inconsistencies, and the existence of Social Competence are discussed later.

The one other noteworthy finding in Study 3 that differed from the adult model representing Adjustment and Growth in latent space (Wink & Staudinger, 2016) was the status of two Big 5 personality traits: good fit could only be obtained in the adolescent model when Conscientiousness was allowed to load positively on both Personality Adjustment and Personality Growth, and when Openness was allowed to load negatively on Personality Adjustment and positively on Personality Growth. This was a departure from the single loadings obtained in the previously published adult model (Wink & Staudinger, 2016), but similarities were observed in Study 4, in that an item reflecting the drive or motivation aspects of conscientiousness, *High aspiration for self*, was an indicator of Personality Growth, and the three items that were removed from the adult Adjustment scale in Study 1 because of low alpha reliability, appear as negative indicators of Personality Growth in adolescence. Of these, *Favors status quo* loaded negatively onto Personality Adjustment. Reasons for these differences are discussed later.

**Three Latent Classes of Personality Adjustment and Growth Trajectories**

Study 2 employed latent growth curve analysis to identify change in scores on the Personality Adjustment and Growth scales we had constructed in Study 1. Significant change was found over the approximately 27 years from young adulthood to late middle adulthood, with both scores on both scales increasing overall. Personality Adjustment was found to have a linear trajectory of steady increase, while Personality Growth peaked at middle adulthood and overall showed slight increase from young adulthood to late adulthood (i.e., a non-linear trajectory). Due to the number of timepoints used in the analysis, specific non-linear trajectories such as exponential or power curves could not be tested.
By carrying out latent class growth analysis, we were also able to look beyond average trajectories to identify groups within the sample that changed in similar ways over time with respect to Personality Growth and Adjustment simultaneously. Three groups were identified: one was labelled dormant because it lacked increase in either personality growth or adjustment; one was labelled thriving because their levels of adjustment were initially rather high and both Personality Growth and Personality Adjustment increased over time; and the third was labelled activated because, although their Personality Adjustment scores increased over time, their Personality Growth was very high initially and did not change significantly over the length of the study.

**Trajectories of Personality Maturation Towards Growth Predict Wisdom-related Performance in Later Life**

To support the primary aim of this dissertation, in each of the papers presented in this dissertation, WRP was included either as a marker of personality growth, or as a dependent variable or distal outcome. Without exception, positive relationships were found between Personality Growth and WRP, in each case as hypothesized. In Study 1, WRP was used only as an indicator of a latent Personality Growth factor at the late adulthood timepoint: it was at this timepoint that the relationship between Personality Growth and wisdom had already been established previously (Wink & Staudinger, 2016); there was nothing new in the finding that at among older adults, high levels of personality growth were associated with wisdom, however, this finding contributed to overall convergent validity of the new scales.

In Study 3, a similar model using WRP as a predictor of three latent factors demonstrated that only Personality Growth was associated with wisdom in adolescence, a relationship which was not taken to have any causal implications because the measures were concurrent. However, Study 2 is uniquely supportive of the proposition that levels of
IX. DISCUSSION AND CONCLUSIONS

personality growth are not only concurrently associated with wisdom, but also are antecedent to wisdom. In this, the first longitudinal study of general wisdom, late adulthood WRP was included as a distal outcome of earlier personality growth: in the first place, it was added to the latent growth curve model and it was shown that the Personality Growth intercept, i.e., initial scores at young adulthood, approximately 34 years of age, significantly predicted WRP scores at approximately 73 years of age. The chronological distance between the end of the latent curve and the late adulthood measurement of wisdom, as well as the difference in method of measurement (expert ratings vs performance) lend credence to the proposition that maturation towards growth by young adulthood is an important predictor of later life wisdom.

In addition, WRP was included in the latent growth model submitted to latent class analysis, clarifying the relationship between initial levels of Growth and late adulthood WRP: there was one significant difference found between the classes identified in terms of WRP, in that the activated class, who were always high in Growth and increased in Adjustment over time, had a higher mean WRP score than the thriving class, who were high in Adjustment and increased in Growth from rather low initial levels.

General Discussion

Mastering and Transcending the Given across the Lifespan: The Usefulness of Distinguishing between Personality Growth and Adjustment

The argument for distinguishing between personality adjustment and personality growth as two trajectories of positive personality development rests on two foundational assumptions that were in need of further empirical support. The first of these is that personality growth and adjustment represent different, positive personality constructs present at all adult life phases, and secondly that they are indeed trajectories, i.e., dynamic personality constructs that are capable of stability or change. The theoretical foundations
IX. DISCUSSION AND CONCLUSIONS

discussed in previous literature (Staudinger & Kessler, 2009; Staudinger & Kunzmann, 2005) appear to hold fast throughout the empirical work of this dissertation, but now, in addition to the empirical work showing the usefulness of the distinction in later life (Wink & Staudinger, 2016) there is empirical support for employing the distinction in middle and early adulthood and even during adolescence. At the same time, some important differences within the constructs have been exposed at different timepoints and it is clear that further work is necessary.

Most obvious among the new findings regarding the distinction between Personality Growth and Personality Adjustment are the structural differences in the final adolescent model that was successfully applied in two samples in Chapter 8. Two of these warrant discussion here in light of the project as a whole: first, Social Competence emerged as a third factor, and second, Conscientiousness loaded onto Personality Growth, and Openness to Experience loaded negatively onto Personality Adjustment. The Social Competence factor in both adolescent samples included items demonstrating other-directed social maturity, close to what has previously been referred to as surgency, which has previously been found related to future social competence (Shiner, 2000). While statistical relationships between adolescent factors and adult Personality Adjustment and Growth was not explored in the empirical papers, it was proposed in Chapter 8 that Social Competence in adolescence should be related to the Interpersonal Warmth facet of adjustment in adulthood, reflecting the relationship between childhood surgency and adult social competence. A preliminary post-hoc investigation of this offers some support: of the adolescent factors, only Social Competence is a predictor of Interpersonal Warmth at young adulthood. The likely explanation for Social Competence being found as a third factor in Studies 3 and 4, therefore, is that this is a feature specific to adolescents: while mastery of developmental tasks in adulthood requires an element of social competence, the same is not true during adolescence, and the development
of social competence may in fact be an important task in and of itself. This is not to say that Social Competence has no function in adolescence, but rather that the function in adolescence was not relevant to Personality Adjustment. However, if the proposition that Social Competence becomes subsumed under personality adjustment during adulthood is correct, then the mechanisms of this are certainly worthy of further research.

The other findings that hint at dynamic changes in the transition from adolescence to adulthood related to Conscientiousness and Openness to Experience. Conscientiousness is an important aspect of personality adjustment in adulthood (Staudinger & Kunzmann, 2005), and has not previously been associated with personality growth. The finding has two explanations, firstly that some personality growth is expected during adolescence, in the manner of exploration during the expected identity moratorium of this developmental stage (Marcia, 1966). Although personality growth may be atypical and require transcendence of the given, this is not necessarily the same as rule-breaking. Openness to experience itself, which usually best represents this exploratory interest, is, interestingly, negatively associated with Personality Adjustment during adolescence. This means that although some personality growth is expected during adolescence, the major developmental tasks can be completed with less exploration. This is probably truer for some than others, for example those who favor tradition and conservation, those who do not wish to take risks, and those for whom acceptable social roles are provided by family or social institutions (see Helson & Srivastava, 2001; Weiss, Freund, & Wiese, 2012). For many people this represents identity foreclosure (Marcia, 1966), and it also seems likely that many of those who have already explored and are now committed to identities are among the most highly adjusted with no need to explore further. Similarly, it may be the case that the most highly adjusted adolescents have not begun to explore yet and will do so later. Finally, given that Favors status quo also loaded positively onto the Personality Adjustment factor in Study 4 with the American adolescents,
Adjustment can be considered as a protective mechanism that buffers against the more challenging side of growth until the person is sufficiently matured, in the sense of being able to self-regulate emotions. In this sense, although personality adjustment can clearly develop with no signs of personality growth, it may also have an important role as a scaffold that represents the intrapersonal stability necessary for the development of personality growth. Results from the longitudinal work with adults support this interpretation.

**Personality Adjustment is a Scaffold for Personality Growth, not an Antecedent of Wisdom**

Adjustment has been characterized as a normative trajectory, and for two out of the three latent classes in Chapter 6, it increases steadily across adulthood. This supports the central idea that as we age, we seek mastery over the given, and mastering the given gives a reward of further adjustment, in line with the corresponsive principle (e.g., Roberts, Caspi, & Moffitt, 2003). The factor structure identified in Study 1 suggests that, as far as personality goes, there are both intrapersonal and interpersonal aspects to the resources required for this. Mastering the given can be understood in terms of the successful deployment of those resources to complete socially prescribed age- or stage-graded developmental tasks, such as developing and committing to identity in adolescence or emerging adulthood (Erikson, 1982; Luyckx et al., 2006; Meeus, van, Keijsers, & Branje, 2012), starting a family, entering the work force, and coping with physical decline (Hutteman et al., 2014; Seiffge-Krenke & Gelhaar, 2008). The personality traits associated with the maturity principle (Caspi et al., 2005), i.e., conscientiousness, agreeableness, and emotional stability, are typically useful in meeting the challenges presented by these tasks, and also increase as a result of engaging with these tasks (Lüdtke, Roberts, Trautwein, & Nagy, 2011), or, as stated earlier, adjustment begets adjustment.
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In adolescence (Study 3) and adulthood (Study 1), personality adjustment is positively associated with life satisfaction, supporting a similar finding from late adulthood (Wink & Staudinger, 2016) and supporting a view of this form of positive personality development as functional, reflective of at least adequate social and emotional functioning in one’s society. Personality adjustment is consistently not associated with wisdom-related performance except through its association with personality growth. This gives a strong indication that although personality adjustment is a favorable, positive construct, it is not, in and of itself, a comprehensive marker of successful aging in the sense of progress towards optimal outcomes, specifically wisdom. Aside from the well-established relationships between personality adjustment and subjective well-being, some level of personality adjustment should also be understood as a necessary but not sufficient precondition for the development of later life wisdom. This appears to be a contradiction of much of the literature linking maturation and wisdom, particularly those studies using self-report inventories of personal wisdom, which tend to suggest that later life wisdom is either a cause, a sign, or a consequence of subjective well-being (e.g., Ardelt, 1997; Bergsma & Ardelt, 2012). This difference is likely due to differences between personal and general wisdom in the degree to which transcendence is considered important, and what needs to be transcended. As mentioned earlier, it may be the case that maturation towards personality adjustment is more necessary for personal wisdom than general. In addition, efforts were made to establish general wisdom-related performance as having a distinct psychometric location from established personality measures (Staudinger et al., 1997), an important feature of the performance approach that is not shared by self-report approaches.

However, the lack of direct associations between personality adjustment and wisdom in the empirical work of this dissertation should not be interpreted as meaning that adjustment has no role. Rather, we can see in Study 2 that personality adjustment increases steadily for
the *activated* class, who had significantly higher WRP than the *thriving* class. Although it is not possible to draw causal conclusions without a closer focus on the longitudinal interplay between personality adjustment and growth (along with many other possible variables), it is possible to draw the tentative conclusion that adjustment functions not only in terms of gains towards subjective well-being, but also, thereby, as a reinforcing scaffold for the development of personality growth over time. While a foundation should suffice for some personality growth to occur, the analogy of a scaffold refers to the need to repeatedly reinforce the structure as it grows. It has been proposed that the intense self-examination involved in high levels of personality growth may threaten subjective wellbeing (Staudinger & Kunzmann, 2005; Trapnell & Campbell, 1999) and perhaps, as suggested above, personality adjustment presents a stable, prolonged buffer against this threat. The *activated* class, for example, were not very different from the overall sample in terms of personality adjustment intercept and slope, meaning that their high level of personality growth occurred alongside quite normal progress in adjustment. What is missing from the sample is a hypothetical group who attain high levels of personality growth without the scaffold of adjustment and therefore cannot sustain them: the path of this hypothetical group could be reflected in a number of different forms of maladjustment that do not feature in this sample but may be better represented in a broader sample with more problems of living.

With respect to the corresponsive principle (Caspi et al., 2005), it may be the case that sufficient personality adjustment in adolescence allows for personality growth to begin, that divergence in the two trajectories is most likely at young adulthood, and there is a Jungian compensatory tendency (e.g., Wink, 1999) for the trajectories to converge by late adulthood: personality adjustment provides opportunity for personality growth; personality growth requires personality adjustment for maintenance. This describes the dynamic between personality adjustment and growth in a very similar way to the interplay between high levels
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of affect optimization and complexity (see Staudinger, Dörner, & Mickler, 2005): they are mutually reinforcing at the highest level.

**Personality Growth is an Antecedent of Wisdom**

In adolescence (Study 3) and late adulthood (Wink & Staudinger, 2016), levels of personality growth are positively associated with concurrent levels of wisdom-related performance. What was uniquely established through Study 2 is that personality growth by young adulthood is a significant predictor of WRP in late adulthood almost 40 years later. This resonates with longitudinal findings showing that a Seeker class scored rather highly on a later measure of wisdom (Helson & Srivastava, 2001). This creates a very strong case for further attention to personality growth as a distinct form of maturation that is developmentally important at least from young adulthood. It can be found separately alongside personality adjustment and indexes insight, ethical behavior, a motivation to transcend the given, and an open, thoughtful approach to life (as seen in Studies 1 and 3). Overall, it appears to represent that aspect of personality that, in the ontogenetic model for the development of wisdom (Baltes & Smith, 2008), is a general person factor, likely impacting on the amount and type of experience gained, and that represents skills in the gathering and use of insight in reflecting on that experience. Personality growth is only one of many such factors, but because the young adulthood measure captured a sizeable amount of variance in late adulthood WRP scores in Study 2, it is clearly an important one. Yet it is also important not to overstate the role of personality growth. At each measurement occasion, personality adjustment is present, as explained above, sharing at least a small relationship with personality growth. This means that we may have overlooked those who have low levels of personality adjustment. It is therefore of some interest to try and obtain a sample that
includes more maladjusted participants to test the hypothesis that personality growth, if not held stable by the scaffolding that adjustment provides, can lead to mental health problems.

Thus, there is some reconciliation between the position that wisdom develops idiosyncratically and that it develops in typical ways. What appears to be typical for all is maturation towards personality adjustment, the acquisition and increasingly expert use of resources to master the given. This alone does not lead to the development of wisdom in later life: it is instead supportive of personality growth, which itself represents a possible pathway to increased wisdom. Being high on personality growth may be very similar therefore to being wisdom-prepared: in possession of a robust resource profile that makes one more likely to perform well when it is necessary to produce general wisdom (Glück & Baltes, 2006), whether that necessity comes from the developmental relevance of wisdom as we age, or from demands unique to the person. Aside from socially prescribed developmental tasks, what challenges life brings and the experiences a person engages with are idiosyncratic, but there is a pattern in the manner in which, and frequency with which, a person who is already mature in terms of personality growth by young adulthood interacts with those challenges and experiences.

As such, if we seek to improve wisdom, it is possible that there may be a critical period up to young adulthood in which personality growth might be encouraged: indeed to the extent that adolescence and emerging adulthood are periods in which some exploration of roles is tolerated by society, there is already a structural encouragement for some personality growth to occur and this might be better capitalized on. However, there does not appear to be any reason why, before whatever erosion in cognitive processing occurs, more personality growth cannot be encouraged beyond adolescence, for example through deliberate interventions to encourage positive plasticity in the personality domain in work contexts (see
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Oltmanns, Richter, Godde, & Staudinger; Staudinger & Bowen, 2010). This was one of the reasons behind the decision to label one of the classes activated: This injects a sense of hope that any critical period is not innate, but rather is subject to societal forces that can be confronted, and if the conditions (in work, education, family contexts, for example) are appropriate, then such activation is available to many. In contrast, it must be considered whether the high levels of personality adjustment among the thriving class are indicative of a dampening effect of personality adjustment on personality growth. That this group had relatively low levels of wisdom in later life suggests that an attempt to increase wisdom by promoting greater adjustment among adolescents and early adults, without also promoting growth, might have precisely the reverse effect of inhibiting the widespread increases in wisdom. This is an extremely important possible unintended consequence of approaches to successful aging that, however well-intentioned, focus too only on high levels of personality adjustment. Indeed, this may be associated with Sternberg’s warnings about an overemphasis on the acquisition of a limited range of tacit knowledge leading us towards a generation of ‘smart fools’ (Sternberg, 2004). Perhaps there is a similar risk that a focus on personality adjustment will lead, or has already led in the past, to a generation who overvalue subjective well-being, a generation of happy fools. The ideal, clearly, is not a class of unhappy wise folk, but rather a better understanding of how personality growth and adjustment can be co-developed to increase the pool of wisdom in society.

Limitations

Specific limitations have been addressed in each of the empirical chapters, leaving two overarching limitations for discussion here. The first of these concerns the IHD sample. It is self-evident that the sample size is only just sufficient for some of the analyses carried out. However desirable it is to have a larger sample for the invariance tests and for the LCGA
work, there is to date no other longitudinal sample spanning a similar time that includes a measure of wisdom. While that weakness, along with some other generic criticisms of the sample that were mentioned in the empirical chapters, is acknowledged, the unique longitudinal addition to the wisdom literature that the dissertation offers overall, more than compensates. It is, of course, crucial that the findings are interpreted with caution and tested in other, larger samples. An enduring problem associated with the samples used is that of cohort effects. On one hand, the two samples used in the empirical papers in this dissertation are somewhat dated. But it has been argued that growth, at least, is a form of development that transcends culture and time (Fromm, 1994a) and regardless of country or cohort within the papers of this dissertation, the central propositions about the validity of the distinction between personality growth and adjustment, as well as their associations with wisdom and subjective well-being, are consistent. The terms *mastering the given* and *transcending the given* may be robust descriptors of personality adjustment and growth precisely because what is given may change, but what is required to *master* and *transcend* what is given is less changeable. In the same way, developmental tasks may change (Hutteman et al., 2014), but, short of dramatic social upheavals, are not going to vanish: there will likely always be givens as long as there are societies.

The second major limitation of this thesis is that it appears that the attempt to find antecedents of later life wisdom did not reach early enough into development. While it is a unique and exciting finding that personality growth in early adulthood is positively related to later life wisdom-related performance, preliminary post-hoc investigations of the data show that this pattern, as suspected, can also be traced right back to early adolescence. It is encouraging that through adolescence, the distinction between growth and adjustment holds, but it appears that if there are seeds of wisdom, one needs to look earlier than adolescence,
even within the realm of personality development, to identify the precursors that push a person to invest themselves more in maturation towards growth or adjustment.

**Further Research: Where to Go from Here?**

There are two strands of research that might stem from this dissertation. The first is to address limitations in the empirical work, and the second is to extend the findings. In terms of the former, there are primarily methodological considerations that can be addressed with further work. In order to make use of the IHD sample, it was necessary to use Q-sort data. This has both benefits and drawbacks: one of the most important next steps should be to use the items selected by experts in Study 1 to create scales to measure personality growth and adjustment more directly in different samples. The question of specificity in each phase of life is unresolved for those scales, and more investigation is necessary, for example in a multigroup framework, to create scales that are either specific to each phase of life, or to test the reduced set of core items that are relatively invariant for the sake of comparisons. This seems most straightforward in the case of adolescence and late adulthood, where the scales used are validated against other criteria. The purpose of doing this would be to gain a clearer understanding of the relationship between personality growth and adjustment at different points in the lifespan, without the complication that the Q-sort data have a built-in dependency that clouds an understanding of their inter-relations. Additionally, the nature of this interplay across time should be investigated. In Study 2 it was clear that personality adjustment and growth follow different trajectories, and it was not clear what the relationship between these across time was; cross-lagged regressions would assist in clarifying this, but data not from Q-sort, and a larger sample would be useful because of the number of parameters involved. While a number of existing longitudinal studies are good candidates to include measures of personality growth and adjustment, existing data is unlikely to be easily
used to infer latent growth and adjustment factors: while it may be possible to use proxy measures to do this (in the manner of Ardelt, et al., 2018), there has typically been so much emphasis on measuring subjective well-being that it may be difficult to construct a diverse enough measure of personality growth in existing datasets. One of the strongest recommendations from this dissertation is therefore that measures of growth (e.g., Psychological Well-being, Psychological Mindedness, Openness to Experience) be included in longitudinal investigations of healthy aging as soon as is possible. While more and more such studies will likely include measures of wisdom in later life as a marker of successful aging, predicting successful aging using only measures of personality adjustment is likely to be of limited value.

The finding that personality growth at young adulthood is a predictor of later life wisdom, and that personality growth and adjustment are already distinct constructs in adolescence, now gives some urgency to the question of what factors contribute to this. Specifically, what factors lead to the advanced levels of personality growth demonstrated by the activated class? Is personality growth in adolescence carried directly forward into young adulthood or is there a period of rank-order instability in emerging adulthood? What environmental and contextual, social and familial factors in childhood are predictive of personality growth and adjustment in adolescence? Each of these questions can be addressed with longitudinal work employing measures as discussed in the preceding paragraph.

Although there is evidence that changes from adolescence to adulthood are very specific to the individual (Lüdtke et al., 2011), Study 2 is an encouraging example of how interindividual differences in intraindividual change can be classified meaningfully.

In addition, there is rich interview data available from the IHD participants gathered at several points during their lives. A retrospective analysis of the content of the responses of
participants classified into the three groups in Study 2 could provide very important information about what factors are typical in the lived experiences, or responses to those experiences, within the groups identified.

**Summary and Conclusions**

The distinction between personality growth and adjustment as constructs that are relevant and valid throughout the lifespan at least from adolescence to later life has proven useful as a way to identify paths towards later life wisdom. Already by young adulthood, high levels of personality growth, represented by thoughtfulness, insight, and a motivation to transcend the given, are predictive of later life wisdom. In addition, personality adjustment, the normative tendency to mature towards a sense of subjective wellbeing, represented by such characteristics as dependability and interpersonal warmth, appears to be a supportive scaffold of high levels of personality growth. While there is already a substantial body of research literature attending to personality adjustment, the development of personality growth towards wisdom remains understudied. With the first longitudinal evidence that personality growth has a role in successful aging, it is now important that further research is carried out on personality growth, particularly in adolescent and young adult samples, to better understand how growth itself develops from childhood. In addition, if we seek to increase wisdom, it appears that one appropriate time to intervene is before young adulthood, when personality growth is already somewhat expected, to ensure that an orientation towards wisdom-preparedness is instilled and maintained with adjustment; but at the same time, there is evidence to suggest that exogenous change can be sparked during adulthood. Research into wisdom as a marker of successful aging that does not attend to personality growth may be fruitless, and it is therefore essential that longitudinal work adopt measures of personality growth in addition to other measures. Similarly, we must nurture both personality adjustment,
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as a scaffold for personality growth, and personality growth itself, as a precursor to wisdom, if we wish to encourage more successful aging.
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