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## Chapter 11

# *Personality Continuity and Change across the Life Course*

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Longitudinal studies are uniquely suited to answer five questions about personality development across the life course. The goal of this chapter is to review the answers to these questions. First, we evaluate evidence about the early origins of personality. Second, we examine the types of continuity and change that are observed across the life course. Third, we review the factors that moderate continuity and change. Finally, we turn to the dual task of developmental research on continuity and change and seek to describe the processes and mechanisms that promote or transform the continuity of personality across the life course.

### THE ORIGINS OF PERSONALITY

#### How Early Can We Tell?

Differences between children's behavioral styles—or temperamental qualities—are already apparent very early in life. But are these evanescent

qualities or do they presage the life patterns to follow? Although many psychological theories subscribe to the view that what is past is prologue, this conjecture has been surprisingly difficult to substantiate empirically because it requires costly and time-consuming longitudinal studies that track people over time and across multiple developmental settings. As such, scientists, clinicians, and parents continue to wonder: Is the child really the father to the man?

The largest study to tackle this question explored links between behavioral styles at age 3 and self-reports of personality traits at age 18 in a longitudinal study of 1,000 children. When the children were 3 years old, they were observed by examiners in a 90-minute testing situation that involved a set of cognitive and motor tasks. Following the testing session, the examiners rated each child on a set of behavioral characteristics, and on the basis of these ratings the children were reliably classified into one of five distinct groups. At age 18, these same children

completed the Multidimensional Personality Questionnaire (Tellegen et al., 1988), which measures one of the best known contemporary structural models of personality traits. The longitudinal results underscored the preservation of individual differences from early childhood to young adulthood (Caspi & Silva, 1995).

"Undercontrolled" children at age 3 were impulsive, restless, distractible, and labile in their emotional responses. At age 18, they scored low on traits indexing Constraint and high on traits indexing Negative Emotionality. They were reckless and careless (low Self-Control), favored dangerous and exciting activities (low Harm Avoidance), enjoyed causing discomfort to other persons (high Aggression), yet also felt mistreated, deceived, and betrayed by others (high Alienation). "Inhibited" children at age 3 were socially reticent, fearful, and easily upset by strangers. At age 18 these children scored high on traits indexing Constraint and low on traits indexing Positive Emotionality. They reported being cautious rather than impulsive (high Self-Control), preferred safe activities over dangerous ones (high Harm Avoidance), refrained from trying to take advantage of others and were unlikely to favor aggressive behavior (low Aggression). Finally, they were lacking in social potency—they were submissive, not fond of leadership roles, and had little desire to influence others (low Social Potency). The three remaining groups of children at age 3 also showed continuity, but less striking patterns. The Confident children at age 3 were zealous, eager to explore the testing materials, and adjusted to the testing situation quickly. The Reserved type were timid and somewhat uncomfortable in the testing session; however, unlike "Inhibited" children, their response disposition was not extreme and their caution did not interfere with their task orientation. Finally, the Well-Adjusted type included children who were capable of self-control when it was demanded of them, were adequately self-confident, and did not become unduly upset when confronting new people and situations; their style of approach and response to the testing session was regarded as expectable by the examiners and made for smooth testing. This style was still discernible at age 18: Statistically, well-adjusted children defined normal, average young adults. Confident and Reserved children resembled Well-Adjusted children in most respects, with the exception that Confident children were significantly more reckless and careless (low Self-

Control) and Reserved children were significantly more submissive (low Social Potency).

The strength of associations between temperamental characteristics in early childhood and personality differences was weak to moderate. However, the fact that it is possible to chart connections from the first few of years of life—as early as age 3—to young adulthood is a significant achievement, for this was a contested point two decades ago (Kagan, 1980).

The second year of life may be the crucial dividing line for predicting later personality differences because of the intercorrelated cognitive-emotional changes that take place during this period. During the second year of life, perceptual and cognitive changes enable children to master object permanence and engage in symbolic play (Kagan, 1981). Self-conscious emotions, such as embarrassment and shame, also begin to appear at this time (Aston-Jones, 1993). These capacities may be necessary for children to form mental representations of their social world and to develop beliefs and expectations that are then affirmed by an expanding and reactive social environment (Kagan, 1984). It is possible that continuity or predictability may not emerge until infants experience these major developmental reorganizations during the second year of life.

There are other reasons to doubt the feasibility of prediction prior to the second year of life. It is possible that much of the observed variation in infant behavior is due to transient conditions, such as temporary allergies. As these conditions disappear with growth, so may their associated behavioral tendencies (Kagan, 1984). It is also possible that predictability may not emerge until a later age because early psychological differences are especially likely to be modified by the child's subsequent experiences with the environment (Chess & Thomas, 1987). Temperamental dimensions in infancy are the entire "personality" of the newborn, but whether they show continuity may depend on the degree of "fit" between the child's temperamental characteristics and the socialization context (Wachs, 1994).

But before giving up on predicting later personality from infant temperament, consider the parallel case of predicting IQ. For many years, psychologists argued that intellectual performance scores obtained in the earliest years of life correlated poorly with IQ scores at later age, implying that infancy and toddlerhood may be especially plastic developmental periods for intellectual status. But new evidence is challenging

this claim, as studies have shown that assessments of habituation and recognition memory in the first year of life predict later IQ quite well (McCall & Carriger, 1993). What implications do these findings have for the prediction of personality? According to Asendorpf (1992a), these findings highlight the distinction between the stability of individual differences and the continuity of psychological constructs. Correlations across time may be low either because the rank order of individuals has changed over time or because the construct "intelligence" is indexed by different behaviors at different ages. Thus, it may be that, relative to previous measures of infant intelligence, habituation and recognition paradigms tap an information-processing mechanism that is more similar to those skills tapped by later IQ tests. With regard to the prediction of personality differences, it may be that behavioral indicators in early childhood and those in adulthood have unequal validity coefficients; that is, they do not adequately reflect the behavioral expression of the same personality construct. Further advances in prediction will be made only if we are able to operationalize the same trait construct at different ages.

#### When Is Personality Fully Developed?

The answer to this question is critical for both psychologists and society. It pertains directly to whether we choose to rehabilitate individuals or subject people to long-term, palliative care. For example, if personality becomes fixed at age 20, then psychologists would approach interventions differently if faced with a sociopath at age 15 or a sociopath at 40. Likewise, it may shift the action of a business owner from trying to shape a supervisor's authoritarian management style to simply firing the person. Despite its obvious importance, the question of when in the life course personality stabilizes has received little direct attention. Most often the answer to this question is implicit in theory and practice rather than explicit. For example, personality disorders are not diagnosed for persons under age 18 (American Psychiatric Association, 1994). This age could not have been selected on an empirical data base, because none exists on the changeability of personality disorders, nor is it clear what theoretical model was used to justify this decision. In this section we review several theories on when personality is fully developed and some empirical data supporting or disconfirming each position.

Psychodynamic theorists and researchers believed that personality structure was set in childhood. Sapir (1934) claimed that personality was formed by the age of 2 or 3, mostly through child training practices. Freud argued that by the time the Oedipal complex was resolved, sometime around age 5, all of the basic structures of personality, the id, ego, and superego, were fully developed. Socialization pressures could bring about minor changes in how these structures were expressed, but the basic tendencies of an individual's personality were set in childhood. Subsequent neo-Freudian theories still located personality development in childhood and essentially ignored development beyond adolescence (e.g., Fenichel, 1945). Anna Freud (1936) alluded to the continued development of defense mechanisms past childhood but refused to describe an explicit chronology. Some ego psychologists broke with Freud, in part because they believed personality continued to develop later in life (e.g., Erikson, 1950; Loevinger, 1966).

Although opinions shifted away from the idea that personality was fixed in childhood as psychodynamic models of development became less popular, these shifts were not predicated on data from empirical tests of these theories. One of the few longitudinal studies to explore psychodynamic constructs and to follow participants from childhood to adulthood is the Block Longitudinal Project (Block & Block, 1980). Among numerous topics examined in this ongoing project, these authors studied the longitudinal consistency of the psychodynamically inspired constructs of ego-control and ego-resiliency. Ego-control reflects an individual's ability and propensity to control impulses and delay gratification. Ego-resiliency reflects an individual's ability to modulate the use of ego-control. That is, it reflects the ability to be controlled when it is desirable and to relax controls and be impulsive when it is appropriate. In the period from childhood (age 3) to young adulthood (age 23) both constructs were moderately to highly consistent and appeared to increase in consistency with age (Block, 1993). Yet the consistency of ego-resiliency and ego-control in adolescence, though moderately high, did not reach unity. This study would appear to disconfirm the notion that deep personality structures stop changing after age 5. Further evidence that psychodynamic constructs continue to develop well into adulthood was provided by Vaillant (1976), who showed that defense mechanisms continued to

mature well into middle age. For example, he found that men doubled the use of mature defenses, such as altruism and sublimation, between ages 20 and 35.

Several post-Freudian theories of personality development retained the perspective that the majority of growth occurred in childhood, but stretched the developmental window into adolescence. For example, Bloom (1964) placed the age of full personality development sometime in late adolescence. He argued that there was "rapid personality development in the early years of infancy and childhood, the possibility of marked changes in the adolescent period, and the likelihood of small change during adulthood and maturity" (Bloom, 1964, pp. 132-133). Bloom speculated that personality traits, such as impulse control, reach their highest level of stability somewhere around age 20. Based on his empirical review of 10 studies, Bloom found that personality did not stabilize by age 20. He was unable to draw a more definitive conclusion because at the time of his research only one longitudinal study of personality had followed people beyond the college years (e.g., Kelly, 1955).

Sanford (1962), another psychodynamically influenced theorist, described a fully developed person as one characterized by high degrees of both differentiation and integration. Specifically, the fully developed person had a rich and varied impulse life, a broad and refined conscience, a strong sense of individuality, and a balance of control and expression of needs. As for when most people reach this stage, Sanford argued that most development occurred in childhood and adolescence, but that personality continued to develop into young adulthood depending on the characteristic one focused on and what experiences an individual had been exposed to in adolescence. For example, Sanford placed the development of impulse control in adolescence and the development of ego, or the controlling function of personality (e.g., maturity), in adulthood. In both cases, Sanford did not presuppose that personality ever stopped changing: "the structure is not fixed once and for all, nor is the consistency of behavior absolute: the highly developed individual is always open to new experience, and capable of further learning." Anticipating Neugarten's (1968) theory that age was in part a social-historical construction and that concepts such as adolescence can correspond to different ages in different historical epochs, Sanford refused to pin specific ages on his stages of adolescence, adulthood, and old age. Rather,

personality would be fully developed in adulthood, and the age at which adulthood was defined would be specific to each culture's historical and social context.

More recent theoretical positions on personality development are consistent with Sanford's claim that it happens in "adulthood." Costa and McCrae (1988; McCrae & Costa, 1994) put forward the hypothesis that personality is fully developed by age 30, which according to current and historical perspectives is a reasonable estimate of when individuals can be considered adults (Modell, 1989). Their inspiration, in part, comes from William James, who claimed that personality is set like plaster by age 30 (James, 1890). Based on an examination of the rank-order consistency of the Big Five personality dimensions over 3- and 6-year periods, Costa and McCrae (1988) concluded that "in general, it appears that personality is about equally stable for men and women over age 30" (p. 861). Additional evidence was provided through several nonempirical overviews of recent longitudinal research (McCrae & Costa, 1990, 1994; Costa & McCrae, 1997). Based on these reviews, McCrae and Costa (1994) concluded that individual differences in personality traits are "fixed" by age 30.

Several theorists are in agreement that personality becomes increasingly stable in adulthood but are equivocal about when and whether personality ever stops changing. Glenn (1980) claimed that as people get older, their "attitudes, values, and beliefs tend to stabilize and to become less likely to change" (p. 602). He did not claim that people could not change later in life, just that the probability of change decreased with age. Glenn (1980) proposed two reasons for increasing stability. First, early in life there was a dense spacing of life events, many of which were novel or for which a person had yet to learn how to cope. The rapid succession of new experiences challenges existing schema, attitudes, and adaptation patterns and thus leads to change. The second reason for increasing stability was the likelihood that individuals would become crystallized in their self-perceptions over time. The longer people hold beliefs, the more likely it is that experiences that contradict one's beliefs will be ignored or discounted. Several longitudinal studies of attitude change support the aging stability hypothesis (Alwin, Cohen, & Newcomb, 1991). Studies by Nunn, Crockett, and Williams (1978) and Cutler and Kaufman (1975) showed that the magnitude of attitude

change was twice as large in young adults as it was in older adults.

Similar to Glenn's Aging Stability Theory, life-span development theories hold that psychological functioning is not fixed at a certain age (Baltes, 1987). Rather, "during development, and at all stages of the life span, both continuous (cumulative) and discontinuous (innovative) processes are at work" (Baltes, 1987, p. 613). Despite the open nature of personality and other components of psychological architecture that develop with time, the effects of psychological, social, and cultural factors are thought to diminish with age (Baltes, 1997). Thus, the range of changeability declines as people grow older. The increasing stability of ontogeny results from a shift in the allocation of resources at different times in the life course (Baltes, 1994). "In childhood, the primary allocation is directed toward growth; during adulthood, the predominant allocation is toward maintenance and recovery (resilience). In old age, more and more resources are directed toward regulation or management of loss" (Baltes, 1997, p. 370). Life span theories do not specify the age at which personality or other psychological constructs stop developing. Rather, they put forward the notion that as we age we become more consistent, yet we retain the potential for change. Empirical research tends to support the life-span theories of personality development. A quantitative review of the longitudinal consistency of personality found that with age people become less likely to change but that change is still possible in midlife and even in old age (Roberts & Friend-DelVecchio, in press). For example, Helson and Wink (1992) found increases in measures of Responsibility, Self-Control, and Masculinity in a longitudinal study of women between the ages of 43 and 52; Roberts (1997) found that occupational experiences, such as working in more prestigious occupations, were associated with changes in measures of Extraversion and Conscientiousness in midlife; Field and Millsap (1991) showed that the Big Five trait of Agreeableness increased significantly in a sample of older individuals (69 to 83).

In sum, evidence indicates that personality does not stop developing in childhood, adolescence, or early adulthood. Rather, personality appears to grow increasingly consistent with age and to reach a plateau later in life than originally thought (e.g., age 50). Furthermore, life experiences appear to be related to individual differences in personality change well into the fourth

decade of life. The weakness of the empirical database on personality development lies in the passive nature of the majority of studies in these areas. The questions that remain are whether personality can be changed through proactive means, such as therapy or training, how much we can change personality, and what we must do to maintain change.

### TYPES OF CONTINUITY OBSERVED IN LONGITUDINAL RESEARCH

The assertion that an individual's personality has changed or remained the same over time is ambiguous. The boy who has daily temper tantrums when he is 2 but weekly tantrums when he is 9 has increased his level of emotional control; he has changed in absolute terms. But if he ranks first in temper tantrums among his peers at both ages, he has not changed in relative terms. Further ambiguity arises if the form of the behavior changes. If this boy emerges into adulthood as a man who is irritable and moody, we may grant that the phenotype has changed but claim that the underlying genotype has not. A final ambiguity arises when a claim of continuity rests on observations not of an individual but of a sample of individuals. The continuity of an attribute at the group level may be masking large but mutually canceling changes at the individual level. There are, in short, several meanings denoted by the term "continuity." The purpose of this section is to disentangle those meanings.

#### Differential Continuity

Differential continuity refers to the consistency of individual differences within a sample of individuals over time, to the retention of an individual's relative placement in a group. This most common definition of continuity is typically indexed by a correlation coefficient.

Evidence about differential continuity has been marshaled using different self-report personality inventories (e.g., Carmichael & McGue, 1994; Costa, McCrae, & Arenberg, 1980; Finn, 1986; Helson & Moane, 1987; McCrae & Costa, 1990; Lubinski, Schmidt, & Benbow, 1996; McGue, Bacon, & Lykken, 1993; Siegler, George, & Okun, 1979; Stevens & Truss, 1985). Personality ratings by clinicians, acquaint-

tances, and spouses reveal significant differential continuities as well (e.g., Block, 1971; Conley, 1985; Costa & McCrae, 1988). Although these conclusions hold for most psychological variables, there is some evidence that different types of variables may exhibit different degrees of differential continuity. Measures of intellectual performance show the strongest continuities; personality variables such as the Big Five are next; and political attitudes and measures of self-opinions (e.g., self-esteem, life satisfaction) are last (Conley, 1984a). What accounts for this hierarchy of continuity? It is unlikely that these differences are simply a function of the differential reliability of the three kinds of variables because this hierarchy obtains even when the measures are corrected for unreliability. However, a related methodological consideration is that ability tests demand maximal performance, whereas personality and attitude questionnaires assess representative, typical performance; the former test format may yield evidence of greater continuity (Ackerman, 1997). It is also possible that consistencies in social behavior require environmental supports, whereas cognitive activities may be supported more by internal feedback systems (Cairns, 1979). This interpretation may account for the relatively lower continuities observed among attitudes, which may be especially susceptible to changes in sociocultural context (Alwin, 1994). Finally, it is noteworthy that this hierarchy of continuity roughly parallels the size of the heritability coefficients for the three kinds of variables, suggesting that genetic and gene-environment correlations may be contributing to continuity. Consistent with this hypothesis, Tesser (1993) showed that, even within the domain of attitudes, those with higher heritabilities are more resistant to change than attitudes with lower heritability.

### **Absolute Continuity**

Absolute continuity refers to constancy in the quantity or amount of an attribute over time. Conceptually, it connotes the continuity of an attribute within a single individual, but it is typically assessed empirically by examining group means in repeated measures analyses of variance (e.g., Conley, 1985). Increasingly, researchers are also making use of growth curve analyses to model mean level changes over time and to examine interindividual differences in intraindividual change (e.g., Jones & Meredith, 1996).

Costa and McCrae (1988) reported that there is little consistent evidence for age changes in mean-levels of personality traits during adulthood. They gathered data about the Big Five personality traits on two occasions, 6 years apart, from 983 participants who ranged in age from 21 to 96. They conducted three different types of analyses: cross-sectional analyses in which individuals of different age were compared to each other; longitudinal analyses in which the same individuals were retested over time; and cross-and time-sequential analyses in which individuals of the same birth cohort (cross-sequential) or of the same age (time-sequential) were compared at different times of measurement. They also gathered spouse reports for a subset of their sample to try to replicate the cross-sectional and longitudinal analyses with different data sources. The results of these various analyses pointed to few consistent age-related personality changes in adulthood. In fact, the lack of convergence among the cross-sectional, longitudinal, and sequential approaches—and the failure to replicate evidence of change using different data sources—led McCrae and Costa (1990) to conclude that sampling differences, practice effects, time of measurement artifacts, and selective mortality may well render spurious many aging effects.

Personality changes have been noted when study participants are first tested as adolescents and young adults (e.g., Carmichael & McGue, 1994; Haan, Millsap, & Hartka, 1986; Helson & Moane, 1987; McGue et al., 1993; Mortimer, Finch, & Kumka, 1982; Stein, Newcomb, & Bentler, 1986; Stevens & Truss, 1985). In general, the evidence points to normative age-related decreases on personality traits related to Neuroticism or Negative Emotionality and to increases on personality traits related to Conscientiousness or Constraint. From late adolescence and through early adulthood, most people become less emotionally labile, more responsible, and more cautious.

In discussing absolute continuity, we have focused on objective indices of personality. But there is also research that examines subjective continuity and change (Heckhausen, Dixon, & Baltes, 1989; Ryff, 1984). For example, Woodruff and Birren (1972) retested a sample of middle-aged adults 25 years after they had originally completed a personality test. In addition to describing their current selves, the sample members were asked to complete the same test as they

thought they had answered it in adolescence. Although there were, in fact, very few age changes over the 25-year span, study participants perceived many such changes. The differences between actual continuities and perceived discontinuities suggest that the flow of psychological time (subjective age) may be relatively independent of calendar time and may exert an effect on behavior that is also independent of chronological age (Settersten & Mayer, 1997).

### Structural Continuity

Structural continuity refers to the persistence of correlational patterns among a set of variables across time. Typically, such continuity is assessed by examining the similarity of covariation patterns among item and factor relations across repeated measurements. The technical work involved in testing whether a factor structure is invariant across age and in determining whether variables have equivalent measurement properties at different ages can be accomplished with structural equation models (Bollen, 1989).

Structural change may indicate a developmental transformation. For example, factor analyses of mental test items in infancy and early childhood suggest that there are qualitative changes in the nature of intelligence (McCall, Eichorn, & Hogarty, 1977). Some developmental psychologists believe that structural invariance should always be established before investigating other kinds of stability (Baltes, Reese, & Nesselrode, 1977). This strategy has been adopted by several groups of researchers investigating the development of individual differences in temperament and personality (e.g., Pedlow, Sanson, Prior, & Oberklaid, 1993).

Although there do not appear to be qualitative structural shifts beyond adolescence in the personality traits examined in most studies (Costa & McCrae, 1992), there may be qualitative shifts in other psychosocial domains, such as in "theories of oneself" (Brim, 1976). Research employing spontaneously generated descriptions of the self points to qualitative changes in adolescents' self-conceptions (Damon & Hart, 1986). As in the example of the differentiation of abilities cited earlier, it is possible that the self-concept of young children, which is relatively undifferentiated, may evolve to become more complex later in childhood both because of cognitive changes and, increasingly throughout adolescence and adulthood, because the person ac-

quires a larger set of roles and corresponding identities (Harter, 1997).

### Ipsative Continuity

Absolute, differential, and structural continuities are indexed by statistics that characterize a sample of individuals. However, continuity at the group level may not mirror continuity at the individual level. For this reason, some researchers examine ipsative continuity, which explicitly refers to continuity at the individual level. Ipsative continuity denotes continuity in the configuration of variables within an individual across time. Ipsative continuity could also be called morphogenic (Allport, 1962) or person-centered continuity. The latter term derives from Block's (1971) distinction between a variable-centered approach to personality, which is concerned with the relative standing of persons across variables, and a person-centered approach, which is concerned with the salience and configuration of variables within the person. An ipsative approach to the study of development seeks to discover continuities in personality functioning across development by identifying each person's salient attributes and their intraindividual organization.

Very little longitudinal research has been conducted from an ipsative point of view. An exception is Block's *Lives through Time* (1971), in which he employed the Q-sort technique of personality description to analyze continuity and change. Continuity and change were indexed by computing correlations across the set of attributes in an individual's Q-sort profiles from different measurement occasions (Q-correlations); the higher the correlation, the more the configuration of attributes within the individual remained stable across time. Block's analysis showed that aggregate indices of continuity mask large individual differences in personality continuity. For example, the average Q-correlations between early and late adolescence exceeded .70 and those between late adolescence and adulthood exceeded .50, but the intraindividual Q-correlations ranged from moderately negative to the maximum imposed by measurement error. Other studies of personality continuity and change between childhood and adolescence report average Q-correlations ranging from .43 to .71, with considerable variability in the distribution of these scores (from -.44 to .92), indicating that from childhood to adoles-

cence people vary widely in how much continuity or change they exhibited (Asendorpf & van Aken, 1991; Ozer & Gjerde, 1989).

The advantage of these Q-sort indices of continuity is that they reference the continuity of each individual within the sample. Unlike assessments of continuity in traditional variable-centered research, these indices do not require reference to other sample members to derive their meaning. The disadvantage of these indices is that they do not yield information about the continuity of individuals along any single attribute (Buss, 1985). Continuity is thus regarded as a general quality of personality only with respect to a set of complex characteristics (Cronbach & Gleser, 1953). This definition is problematic: It can be assumed that people show personality continuity only if the original measurement covered a large proportion of the significant dimensions of personality. To overcome these limitations, Asendorpf (1992b) proposed a technique for deriving measures of each individual's continuity with respect to specific personality dimensions.

### Coherence

The kinds of continuity discussed so far refer to "homotypic" continuity—continuity of similar behaviors or phenotypic attributes over time. The concept of coherence enlarges the definition of continuity to include "heterotypic continuity"—continuity of an inferred genotypic attribute presumed to underlie diverse phenotypic behaviors. Moss and Susman (1980) suggested that specific behaviors in childhood may not predict phenotypically similar behavior later in adulthood, but may still be associated with behaviors that are conceptually consistent with the earlier behavior (Livson & Peskin, 1980). Kagan (1969) noted that heterotypic continuities are most likely to be found from the earlier years of life, when children go through numerous rapid changes. In contrast, homotypic continuities are more likely to be found after puberty, when psychological organization nears completion.

Examples of heterotypic continuities were reported by Ryder (1967), who reexamined the data from Kagan and Moss's (1962) longitudinal study *Birth to Maturity*. Childhood task persistence was related to adult achievement orientation. Similarly, childhood aggression, sociability, physical adventurousness, and nonconformity were related to adult sexual behavior. Another

example of coherence is provided in a 22-year follow-up study of men and women who had been rated as aggressive by their peers in late childhood (Huesmann, Eron, Lefkowitz, & Walder, 1984). As adults, the men were likely to commit serious criminal acts, abuse their spouses, and drive while intoxicated, whereas the women were likely to punish their offspring severely. Other examples of personality coherence include the findings that shy children leave their parental home at an older age and delay their assumption of adult social roles, such as marriage and work (Caspi, Elder, & Bem, 1988; Gest, 1997).

It is important to emphasize that coherence and heterotypic continuity refer to conceptual rather than a literal continuity among behaviors. Accordingly, the investigator who claims to have discovered coherence must have a theory—no matter how rudimentary or implicit—that specifies the "genotype" or provides the basis on which the diverse behaviors and attributes can be said to belong to the same equivalence class. In what sense is adult sexual behavior a "derivative" of childhood physical adventurousness? In what way is driving while intoxicated the "same thing" as pushing and shoving other children?

As these examples illustrate, the "theories" behind claims of coherence often amount to appeals to the reader's intuition. Often they are post hoc interpretations of empirical relations discovered in large correlation matrices (Moss & Susman, 1980). With the notable exception of the psychoanalytic theory of psychosexual stages and their adult sequelae, most personality theories do not specify links between personality variables at different developmental periods, a topic to which we now turn.

To study the coherence of personality development it is necessary to trace personality variables through social-developmental changes while tracking their continuities and to include both temporal and contextual dimensions in the measurement of personality differences (Conley, 1984b). According to Ozer (1986, p. 52), "the notion of coherence refers to a pattern of findings where a construct, measured by several different methods, retains its psychological meaning as revealed in relationships to a variety of other measures" across time and in different contexts.

Below we review three conceptual approaches to the problem of studying personality coherence across the life course. Each of these social-

developmental approaches provides a framework for understanding coherence by focusing on the distinctive ways in which individuals organize their behavior to meet new environmental demands and developmental challenges.

#### *An Organizational-Adaptational Perspective*

Sroufe and his colleagues (Sroufe, Carlson, & Shulman, 1993) have used Anna Freud's concept of "developmental lines" as a heuristic device for the study of personality coherence. By outlining the tasks and milestones that can be expected in the course of development, from infancy through adolescence, they have designed assessment procedures that capture the organization of behavior in different developmental periods. Longitudinal data show that continuity across development can be discerned in children's adaptational profiles with respect to the challenges they face at each developmental phase. This general approach enables Sroufe and his colleagues to confer conceptual coherency on their findings that individuals who are securely attached as infants later explore their environments as toddlers (Maras, Arend, & Sroufe, 1978), are less dependent on their teachers in the preschool years (Sroufe, Fox, & Pancake, 1983), attain higher sociometric status and display greater competence in peer relations in late childhood (Urban, Carlson, Egeland, & Sroufe, 1991), and appear to establish appropriate cross-sex relationships in adolescence (Sroufe et al., 1993). Invariant behavior patterns do not emerge in these findings. Instead, we see a predictable and meaningful way of relating to the environment in different social settings at different ages. The continuities of personality are thus expressed not through the constancy of behavior across time and in diverse circumstances, but through the consistency over time in the ways persons characteristically modify their changing contexts as a function of their behavior.

#### *A Sociological Perspective*

Beyond childhood the search for coherence becomes more complicated, and it may be that a purely psychological approach is insufficient for the analysis of personality continuity and change as the individual increasingly negotiates social roles defined by the culture. Indeed, some researchers have found it useful to adopt a sociocultural perspective and to conceive of the life course as a sequence of culturally defined, age-

graded roles that the individual enacts over time (Caspi, 1987; Helson, Mitchell, & Moane, 1984).

Helson introduced the concept of a "social clock project" as a framework for studying lifespan development. The concept of a social clock focuses attention on the age-related life schedules of individuals in particular cultures and cohorts and organizes the study of lives in terms of patterned movements into, along, and out of multiple role-paths, such as education, work, marriage, and parenthood. In this fashion, the life course can be charted as a sequence of social roles that are enacted over time, and personality coherence can be explored by investigating consistencies in the ways different persons select and perform different social-cultural roles.

In her 30-year longitudinal study of female college seniors, who were first studied in 1958-1960, Helson examined the personality antecedents and consequences of adherence to a Feminine Social Clock (FSC) and a Masculine Occupational Clock (MOC). For example, women who adhered to the FSC were earlier in life characterized by a desire to do well and by a need for structure; women in this birth cohort who adhered to an MOC were earlier in life more rebellious and less sensitive to social norms. Helson et al. (1984, p. 1079) were thus able to identify "culturally salient need-press configurations through time" and to show predictable and meaningful relations between personality and behavior in different social settings at different ages.

#### *An Evolutionary Psychology Perspective*

Bouchard (1995) argued that a purely sociocultural perspective on the life course "ignores the fact that life-histories themselves are complex evolved adaptations." An evolutionary perspective complements the sociocultural perspective by exploring how personality variation is related to those adaptively important problems with which human beings have had to repeatedly contend. Evolutionary psychology thus focuses attention on the coherence of behavioral strategies that people use in, for example, mate selection, mate retention, reproduction, parental care, kin investment, status attainment, and coalition building (see Buss, Chapter 2, this volume). It focuses research on the genetically influenced strategies and tactics that individuals use for survival and reproduction.

An evolutionary perspective on the life course offers a fusion of concerns in evolutionary theory, behavior genetics, and demography (Stearns, 1992). For example, using the evolutionary perspective, Draper and Belsky (1990) and Gangestad and Simpson (1990) have offered hypotheses about personality characteristics and reproductive strategies that facilitate adaptations in different environments at different ages. Although these and other specific models have not yet been tested in the context of longitudinal-developmental studies, they show the promise of evolutionary psychology for organizing longitudinal-developmental data on personality coherence.

### MEDIATORS AND MODERATORS OF CONTINUITY AND CHANGE

#### Age, Time Span, and Method of Assessment

Roberts and Friend-DelVecchio (in press) conducted the most extensive quantitative review of the rank-order consistency of personality to date. To be included in the meta-analysis, each study had to meet three criteria. First, the study focused on variables assumed to be dispositional in nature. Second, the study had to include a longitudinal interval greater than 1 year, to minimize potential test-retest carry-over effects. Third, the sample studied needed to be non-clinical. The 150 identified studies were based on 122 samples, with a total number of 49,968 participants, yielding a total of 3,091 rank-order personality consistency coefficients. The average study in the database had a time interval of 6.7 years.

The meta-analysis confirmed two major conclusions about age and time: Stability coefficients tend to increase as the age of the subjects increases, and they tend to decrease as the time interval between observations increases. The meta-analysis also revealed new evidence about the nature of personality consistency by determining the age at which the rank-order consistency of personality dispositions stabilizes. The results showed that unadjusted (for unreliability) estimates of personality consistency increased from .32 in childhood, to .55 at age 30, and then reached a plateau around .75 between ages 50 and 70. The data do not support the argument that personality becomes fixed at ages 5, 20, or 30. Rather, the data support the conclusion that rank-order consistency peaks at age 50.

To test whether trait domain affects rank-order consistency, Roberts and Friend-DelVecchio (in press) used the five-factor model to categorize the diverse measures used in previous studies of personality consistency. Previous research found that scales assessing Extraversion were the most consistent, but these studies did not assess the full spectrum of the Big Five. The results of this meta-analysis showed that the type of trait measured had minimal effects on personality consistency: The unadjusted correlations were .54 for Extraversion, .55 for Agreeableness, .52 for Conscientiousness, .51 for Neuroticism, and .51 for Openness to Experience. Additional analyses showed that gender had minimal effects on personality consistency. Men and women showed the same patterns of personality consistency across the life course and across trait domains.

The contribution of method of assessment to personality consistency proved difficult to evaluate because method of assessment is frequently confounded with the age of the population studied. Studies of younger populations tend to rely on behavioral observations, whereas studies of older age groups tend to rely on self- and observer-ratings. Debates about the relative merits of these different assessment methods often miss the point that stability and predictive utility are not the only reasons for favoring particular kinds of data. Different kinds of data are differentially suited to answering different questions about continuity and change (Moskowitz, 1986). Ratings may show great consistency in part because they tend to eliminate situational sources of variance. But such assessments are not the method of choice if one is interested in examining the functional relations between an individual's behaviors and other ongoing events in the situation. Despite their lesser individual-difference stability, observational assessments that preserve the precise actions of individuals are well suited for analyzing how social behavior patterns are maintained or changed over time (Cairns & Green, 1979). The study of continuity and change must include both year-to-year assessments of individual differences and minute-to-minute assessments of social interaction. Each provides crucial and complementary information to understanding personality development.

#### Biosocial Transitions

In the previous section we considered the effects of the passage of time on personality continuity and change. But "age itself is an empty variable,

for it is not merely the passage of time, but the various biological and social events that occur with the passage of time that have relevance for personality change" (Neugarten, 1977, p. 633). A life-course perspective invokes two concepts that are useful for thinking about how age-related biosocial events influence personality development (Elder, Modell, & Parke, 1994). Trajectories are long-term pathways of development. Transitions are embedded in trajectories and evolve over shorter times span.

The traditional view is that biosocial transitions (e.g., puberty, marriage, a first job) cause personality change. However, it is important to be explicit about the type of change that is involved. Absolute changes in self-conceptions have been observed when individuals cross important life course transitions, such as becoming parents, but the rank-order of individual differences remains high across this life event (Cowan & Cowan, 1992). Other life-course accounts recognize that the same transition event may not have the same effect on all persons. For example, the age-graded theory of informal social control emphasizes adult social bonds to employment and to partners as "turning points" from crime that can lead some persons to overcome previously established "pathways" into adult crime (Sampson & Laub, 1993). But why do some people change and others do not? Laub and Sampson (1993) suggest three possibilities. First, change involves chance. Second, change comes about as a result of both individual and social-structural characteristics. Third, there may be predictable individual differences in who responds to change-potentiating life events.

It is also important to bear in mind that some life-course transitions are age-graded and expectable, whereas others, even when loosely correlated with age, are unexpected and off-time. Caspi and Moffitt (1993) have proposed that the former may help to bring about change, especially when highly scripted, whereas the latter may accentuate personality differences. This has been called a paradoxical theory because the expectation, according to traditional perspectives on personality change, is that "external life changes are a major catalyst for personality change" (Stewart, Sokol, Healy & Chester, 1986). According to the accentuation hypothesis, just the opposite occurs. Biosocial discontinuities often accentuate preexisting differences between individuals. Rather than change in new and unfamiliar situations, people bring their most characteristic response dispositions to bear

on the way they approach and respond to new environmental discontinuities.

### Historical Factors

A limitation of most longitudinal studies is their historical specificity. This is because simple longitudinal studies assess members of a single birth cohort. Accordingly, it is unknown to what extent knowledge about personality development is historically specific. This is, of course, a problem in the social sciences generally, but it typically remains unacknowledged; both data and theory are presented as if they were transhistorically valid. Social scientists who deal with longitudinal data have been somewhat more sensitive to the issue and have articulated three responses to this problem.

#### *The Metatheoretical Response*

The metatheoretical response has been articulated by social psychologists who question whether psychology is science or history (Gergen, 1982). According to this view, all theory and "findings" are historically conditioned and socially constructed. However, social constructivism as a philosophical perspective negates the possibility of basing applied social practices on scientific findings (Smith, 1994).

#### *The Methodological Response*

The methodological response has been led by developmental psychologists who have observed that simple longitudinal designs confound three types of effects: age, cohort (year of birth), and period (time of measurement) (Baltes, Cornelius, & Nesselroade, 1979). Schaie (1965) proposed a general developmental model that addressed the task of estimating the three effects in relation to psychological functioning. This model has clarified ambiguities emerging from cross-sectional and single-cohort longitudinal designs, but for other purposes the model's prescription for performing multiple longitudinal studies of different birth cohorts is unfeasible (McCall, 1977). There are alternatives, however. Gough, who in the early 1950s developed the California Psychological Inventory (CPI), introduced one such alternative. Every year since 1950, the CPI has been administered to thousands of people, many of them students. In order to understand how responses to the CPI had changed over 35 years from 1950 to 1985,

Gough (1991) computed endorsement frequencies for each true-false item on the CPI for successive samples of students from 1950 to 1985. He then correlated the endorsement frequency of each item with the year of testing. The items that correlated significantly with time were combined in an index labeled Secular Trends. Effectively, Gough created an index that reflected historical trends in responses to the CPI over a 35-year period. One interpretation of this index is that it captures, in part, changes in culture or climate that occurred in the United States between 1950 and 1985, such as greater psychological sophistication (Reich, 1970), increases in individualistic and self-centered attitudes (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985; Lasch, 1979), and decreases in adherence to social norms (Veroff, Douvan, & Kulka, 1981).

The Secular Trends Index is one of the few examples we have found of a quantitative description of change in culture across historical periods. This quantitative index affords two improvements over the cross-sequential time-series approach to understanding the effects of history. The first advantage is that a quantifiable scale permits more detailed inferences to be drawn about how historical changes are registered in psychological functioning. The second advantage is that the Secular Trends Index can be used in single-cohort longitudinal studies to test the effects of historical change on patterns of development. Thus, it affords the opportunity to explore the effect of history within one longitudinal study. For example, change on the Secular Trends Index within a longitudinal study can be compared to the changes demonstrated in the successive cohorts from whom the index was derived. Roberts and Helson (1997) did exactly this by exploring the antecedents and consequences of change on the Gough's Secular Trends Index in the Mills Longitudinal Study (Helson & Wink, 1992), in which the CPI had been administered four times from 1958 through 1989. They found that the women in the Mills Longitudinal study changed on the Secular Trends Index in a fashion similar to the change in cross-sectional samples of students. They also showed that changes on the Secular Trends Index in the longitudinal study were associated with increases in Narcissism and decreases in Social Responsibility. That is, the women of the Mills study changed in the same ways that social critiques described the U.S. culture changing over that same period.

The Secular Trends Index should not be seen as a scale so much as a technique. This new technique could be applied to any personality questionnaire that has been administered widely for a decade or more. Researchers could compute secular trend indices for specific historical periods and over a variety of instruments. Obvious candidates for study would be such personality instruments as the MMPI, Cattell's 16PF, Costa and McCrae's NEO-PI, and Jackson's PRF.

### *The Sociohistorical Response*

The sociohistorical response to transhistorical validity has been led by life-course sociologists who have sought to sketch the flow of influence from macrohistorical developments to the world of the individual and to relate social changes directly to personality development (Elder et al., 1994). Elder's (1979) examination of two birth cohorts who lived through the Great Depression and World War II exemplifies this approach by showing the differential developmental effects of encountering historical events at different points in one's life. However, at least one historian has argued that the coupling of developmental psychology and history represents a "dangerous liaison" because it is unclear whether psychologists are willing to abandon their quest for lawlike predictions (Zuckerman, 1993). Indeed, analyses like Elder's raise a more general epistemological question: How is it possible to move from historically specific findings to a more general understanding of life course processes?

Sometimes it is easy to extract the general finding behind relatively superficial historical differences. For example, a study of men born in the 1920s found that low ego control in adolescence predicted midlife drinking problems (Jones, 1981). A more recent study of children born in the late 1960s found that low ego control in early childhood predicted adolescent marijuana use (Block, Block, & Keyes, 1988). Clearly, the historical change in the drug of choice is trivial; the general finding is obvious. Sometimes the general finding is more obscure. For example, among women the correlation between tested intelligence and the number of children they bear has tended to be negative throughout the 20th century. The exception to this pattern occurred during the postwar baby boom. As Livson and Day (1977) note, these historically specific findings are interesting "only if they are interpreted not as direct if-then relationships, but as providing an understanding of

the intrapsychic and interpersonal characteristics that mediate one's child-bearing responses to a social context prevailing during the period in which fertility decisions are made" (p. 321). Sometimes psychological processes remain general even when the psychological content is historically specific. For example, research on political socialization suggests that although the attitudes of different cohorts may differ, the acquisition of these attitudes takes place during adolescence and young adulthood for all cohorts (Schuman & Scott, 1989). As these examples illustrate, research on personality development that is conducted without a sense of history, without recognition that phenotypic expressions represent a point of articulation between biological, social, and historical processes, may miss the point. Ironically, psychologists may have to be historically specific to grasp the more general essence of the phenomena examined in the study of personality development.

#### HOW IS CONTINUITY ACHIEVED?: MECHANISMS OF CONTINUITY ACROSS THE LIFE COURSE

An extensive database of research attests to personality continuities across the life course. In this section, we examine how environmental, genetic, and transactional processes contribute to personality continuities.

##### Environmental Influences

One continuity-promoting mechanism is so mundane that it is often overlooked: Personality characteristics may show continuity across the life course because the environment remains stable. To the extent that parental demands, teacher expectancies, and peer and partner influences remain stable over time, we could expect such environmental stability to promote personality continuity (Cairns & Hood, 1983). Sameroff (1995) has coined the term "environtype" to underscore that, like genotypes, stable environmental factors can shape and influence the course of phenotypic expressions over time.

Several longitudinal studies have shown that there is a good deal of continuity in the "psychological press" of children's and adults' socialization environments; significant continuities have been found in observational studies as well as in parents' reports of child-rearing practices from

childhood to adolescence (e.g., Hanson, 1975; McNally, Eisenberg, & Harris, 1991; Patterson & Bank, 1989; Pianta, Sroufe, & Egeland, 1989; Roberts, Block, & Block, 1984). In addition, the socioenvironmental conditions of adult life that impinge on material, physical, and psychological well-being also show remarkable intragenerational persistence (Warren & Hauser, 1997). These longitudinal "environmental correlations" are about the same magnitude as longitudinal "personality correlations." If the environments that people inhabit are as stable as these data suggest, then continuities observed in personality measures may simply reflect the cumulative and continuing continuities of those environments (Sameroff, Seifer, Baldwin, & Baldwin, 1993). What is needed is a formal test of the possibility that environmental continuities actually account for observed personality continuities.

It is also unclear from the available studies whether environmental continuity is the product or the cause of stable individual differences. It is possible that features of the environment may reflect the characteristics of individuals who make up the environment. Plomin and Berge-man (1991) showed that measures commonly used by psychologists and sociologists to assess socialization environments both in childhood and adulthood (e.g., parental warmth, social support, social class) may be saturated with genetic variation. What appear to be stable and enduring features of the environment may be a reflection of stable, enduring, and partially heritable individual differences. This may come about through two processes (Plomin, 1994). First, individuals may actively seek out trait-matched environmental experiences for themselves. Second, environmental experiences may reflect social reactions to trait-based individual differences.

##### Genetic Influences

Quantitative methods that are used to estimate genetic and environmental components of phenotypic variance at a given point in time can be extended to estimate genetic contributions to continuity and change across time (see Plomin & Caspi, Chapter 9, this volume). Genetic factors can contribute both to personality change between measurement occasions and to personality continuity across measurement occasions. Genetic influences on personality change may be explored in twin studies by analyzing within-

person change scores; for example, genetic influences on change would be implied by the finding that monozygotic (MZ) twins are more likely to change in concert than dizygotic (DZ) twins. Genetic influences on personality continuity may be explored in twin studies by analyzing cross-twin correlations, that is, by fitting behavior-genetic models to the correlation between twin A's score at  $t_1$  and twin B's score at  $t_2$ .

Both of these analytic approaches have been used to analyze longitudinal behavior-genetic studies. Unfortunately, there are only a few such studies, and these are difficult to compare because of wide differences in the age of study participants and in the measures used.

#### *Age-to-Age Change*

Some of the earliest studies of genetic influences on change were performed with children in the Louisville Twin Study. Even though assessments of temperament across 6, 12, 18, 24, and 30 months of age showed low to modest stabilities, within-pair analyses revealed that MZ twins were more likely to change in concert than were DZ twins (Matheny, 1983, 1989). These results suggest that changes in childhood temperament may be under some genetic influence, a finding that has been partially replicated in the MacArthur Longitudinal Twin Study (Cherny et al., 1994; Plomin et al., 1993; Saudino, Plomin, & DeFries, 1996).

Turning to adolescence and adulthood, the picture looks different. One study examined twins who completed personality inventories at age 16 and again at age 28 (Dworkin, Burke, Maher, & Gottesman, 1976, 1977). The results showed that changes in trait levels from adolescence to adulthood were influenced by genetic similarity. However, subsequent and larger studies yield mixed evidence about this point. At least two short-term longitudinal studies, as well as one adoption study, did not find evidence for genetic influences on age-to-age personality changes (Eaves & Eysenck, 1976; Loehlin, Horn, & Willerman, 1990; Pogue-Geile & Rose, 1985). It appears that there may be genetic contributions to temperament and personality change in childhood but only slight, if any, genetic contributions to personality change in adulthood. In fact, most of the personality change observed in late adolescence and adulthood appears to be due to unique individual experiences, that is, to nonshared envi-

ronmental influences (McCartney, Harris, & Bernieri, 1990).

#### *Age-to-Age Continuity*

Even fewer studies have explored genetic contributions to temporal continuity by analyzing cross-twin correlations. A notable exception is the MacArthur Longitudinal Twin Study. Analyses of both observational measures and parental reports of infant temperament suggest that a significant portion of the phenotypic stability of temperament may be accounted for by genetic factors (Plomin et al., 1993).

Turning to adulthood, at least one longitudinal study has examined the genetic and environmental etiology of age-to-age continuity. McGue et al. (1993) administered the Multidimensional Personality Questionnaire to a sample of twins on two occasions 10 years apart. The results showed that the MZ cross-twin correlations were consistently and significantly larger than the DZ cross-twin correlations. The authors estimate that approximately 80% of phenotypic stability may be associated with genetic factors.

Although the data suggest that genetic factors can influence the continuity of personality, they do not address the mechanisms by which they do so. One possibility is to examine physiological mechanisms. This is illustrated by research on shyness or "inhibition to the unfamiliar." Individual differences in behavioral inhibition are heritable and stable, and, at least in early childhood, their phenotypic stability appears to be influenced by genetic factors (Plomin et al., 1993). Kagan (1997) has suggested that inherited variations in threshold of arousal in selected limbic sites may contribute to longitudinal consistencies in this behavioral style. Another possibility is that genetic factors exert their influence on phenotypic stability through gene-environment correlations; thus, personality continuity across the life course may be the result of transactional processes that are, in part, genetically influenced.

#### **Person-Environment Transactions across the Life Course**

There are many kinds of transactions, but three play particularly important roles both in promoting the continuity of personality across the life course and in controlling the trajectory of the life course itself (cf. Buss, 1987; Plomin, DeFries, & Loehlin, 1977; Scarr & McCartney,

1983). Reactive transactions occur when different individuals exposed to the same environment experience it, interpret it, and react to it differently. Evocative transactions occur when an individual's personality evokes distinctive responses from others. Proactive transactions occur when individuals select or create environments of their own. (We deliberately use the term "person-environment transaction" rather than "interaction" or "correlation" because the former term is methodologically neutral whereas the latter terms have specific statistical and data-analytic connotations; see Rutter, 1983; Wachs & Plomin, 1991. We also deliberately speak of "person-environment" rather than "gene-environment" transactions because we do not presuppose knowledge of the origins of the "person" variance in the equation.)

#### *Reactive Person-Environment Transactions*

Each individual extracts a subjective psychological environment from the objective surroundings, and it is that subjective environment that shapes subsequent personality development. This is the basic tenet of the phenomenological approach historically favored by social psychology and embodied in the famous dictum that if people "define situations as real, they are real in their consequences" (Thomas & Thomas, 1928). It is also the assumption connecting several prominent theories of personality development: Epstein's (1991) writings on the development of self-theories of reality; Tomkins's (1979) description of scripts about the self and interpersonal interactions; and Bowlby's (1973) analysis of working models.

All three theories assert that people continually revise their "self-theories," "scripts," and "working models" as a function of experience. But if these function as filters for social information, the question is also raised about how much revision actually occurs (Gurin & Brim, 1984). The answer is provided, in part, by cognitive social psychologists whose research suggests that once self-schemata—psychological constructs of the self—become well organized, a host of cognitive processes makes individuals selectively responsive to information that is congruent with their expectations and self-views (Fiske & Taylor, 1991). Persistent ways of perceiving, thinking, and behaving are preserved, in part, by features of the cognitive system, and because of these features the course of personality is likely to be

quite conservative and resistant to change (Westen, 1991).

The role of cognitive factors in promoting the continuity of individual differences in personality and psychopathology has been detailed by Crick and Dodge (1994), whose social information-processing model of children's social adjustment includes five steps: (1) to encode information about the event; (2) to interpret the cues and arrive at some decision about their meaning and significance; (3) to search for possible responses to the situation; (4) to consider the consequences of each potential response and to select a response from the generated alternatives; and (5) to carry out the selected response. Research has identified individual differences in processing social information at all of these steps (Quiggle, Garber, Panak, & Dodge, 1992).

A basic assumption of this and other social information-processing models is that early temperamental characteristics in combination with early social experiences can set up anticipatory attitudes that lead the individual to project particular interpretations onto new social relationships and situations (Rusting, 1998). This is accomplished through a variety of informational processes in which the person interprets new events in a manner that is consistent with his or her experientially established understanding of self and others. Individuals are thus hypothesized to elicit and selectively attend to information that confirms rather than disconfirms their self-conceptions (Snyder & Ickes, 1985). This promotes the stability of the self-concept, which, in turn, promotes the continuity of behavioral patterns that are congruent with that self-concept (Graziano, Jensen-Campbell, & Hair, 1996).

Individual differences in social information processing may also reflect unconscious mental processes; individual differences play a more important role in automatic rather than in controlled processing of social information (e.g., Rabiner, Lenhart, & Lochman, 1990). Indeed, psychoanalytic concepts (e.g., transference) are implicit in cognitive perspectives on personality development. For example, methodologically sophisticated  $N = 1$  studies and experimental studies using the tools of research in social cognition have shown how recurring emotional states organize experience and how individuals transfer affective responses developed in the context of previous relationships to new relationships (e.g., Andersen & Baum, 1994; Horowitz et al.,

1994). However, persistent ways of perceiving, thinking, and behaving are not preserved simply by psychic forces, nor are they entirely attributable to features of the cognitive system; they are also maintained by the consequences of everyday action (Trachtenberg & Viken, 1994).

### *Evocative Person-Environment Transactions*

Individuals evoke distinctive reactions from others on the basis of their unique personality characteristics. The person acts, the environment reacts, and the person reacts back in mutually interlocking evocative transaction. Such transactions continue throughout the life course and promote the continuity of personality.

Already very early in life children evoke consistent responses from their social environment that affect their subsequent interactions with adults and peers (Bell & Chapman, 1986). It is also through evocative transactions that phenomenological interpretations of situations—the products of reactive interaction—are transformed into situations that are “real in their consequences.” Expectations can lead an individual to project particular interpretations onto new situations and relationships and thence to behave in ways that corroborate those expectations (Wachtel, 1994).

The process through which evocative person-environment transactions can sustain individual differences has been explored in social-interactional and experimental analyses of aggressive behavior where children's coercive behaviors have been shown to shape the responses of adults to them (Lytton, 1990; Patterson & Bank, 1989). This is not, however, to merely substitute one “main effects” model (parental influence) with another such model (child influence). A transactional model recognizes that partners react back and forth in mutually interlocking evocative transactions and contribute to the continuity of dispositional characteristics by evoking congruent responses from each other. Increasingly, behavioral genetic designs may help to untangle whether evocative effects are the product of genetic differences or represent true environmental effects (O'Connor, Deater-Deckard, Fulker, Rutter, & Plomin, 1998), and new statistical techniques for analyzing interaction data may help to decompose how different individuals and relationships in the family conspire to maintain behavioral continuity (Cook, Kenny, & Goldstein, 1991).

Individuals also manifest their personalities in expressive behavior (Borkenau & Liebler, 1995). Facial expressions of emotion are especially important in evocative person-environment transactional processes for they convey information to others about what the individual is feeling and about how the individual is likely to act. The finding that personality traits are registered in facial expressions suggests that personality-related expressions of emotion may influence the course of social development by evoking congruent and reciprocal responses from other persons in the social environment (Keltner, 1996).

### *Proactive Person-Environment Transactions*

The most consequential environments for personality development are interpersonal environments, and the personality-sustaining effects of proactive transactions are most apparent in friendship formation and mate selection (Asendorpf & Wilpers, 1998; Kandel, Davies, & Baydar, 1990). Personality effects on social relationships serve to maintain and elaborate initial personality differences between people and proactive transactions may account for the age-related increase in the magnitude of stability coefficients across the life span.

Friends tend to resemble each other in physical characteristics, values, attitudes, and behaviors (e.g., Dishion, Patterson, Stoolmiller, & Skinner, 1991). Whereas popular wisdom holds that members of peer groups are similar because peers influence their friends to behave in similar ways, empirical studies suggest that members of peer groups are similar because individuals selectively choose to affiliate with similar others (e.g., Ennett & Bauman, 1994). Cairns and Cairns (1994) suggest that affiliations with similar others may serve as guides for norm formation and the consolidation of behavior patterns over time. Continuities in social networks may thus contribute to behavioral continuity because the demands of the social environment remain relatively stable over time. Moreover, consistency in how members of the social network relate to the individual may contribute to behavioral continuity because it affects how individuals view and define themselves.

Research on marriage similarly indicates that partners tend to resemble each other in physical characteristics, cognitive abilities, values and attitudes, and personality traits (Epstein & Guttman, 1984). Assortative mating has known

conflict  
but she  
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bring in  
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genetic and social consequences, and it may also have implications for the course of personality development because similarities between spouses create an environment that reinforces initial tendencies (Buss, 1984). This proactive transactional process is documented in a 50-year longitudinal study of political attitudes. The political liberalism acquired by women while in college in the 1930s was sustained across their life course in part because they selected liberal friends and husbands who continued to support their politically liberal attitudes (Alwin et al., 1991). In a 10-year longitudinal study of couples, Caspi and Herbener (1990) found that persons who married a partner similar to themselves were subsequently more likely to show personality continuity over time. It may be that through assortative mating individuals set in motion processes of social interchange that help to sustain their dispositions, for in selecting marriage partners individuals also select the environments they will inhabit and the reinforcements to which they will be subject for many years (Buss, 1987).

#### HOW DOES CHANGE COME ABOUT?: MECHANISMS OF CHANGE ACROSS THE LIFE COURSE

With the flood of research demonstrating longitudinal stability, the focus of recent theory has been on processes that contribute to personality continuity. An analogous focus on the processes that result in personality change is lacking. Interestingly, most of the theoretical writings on what causes personality change come from nonpsychological domains (e.g., sociology) or rely on behavioral models or role theories that have not been updated in relation to personality development in over 30 years. In reviewing the disparate literatures on personality change, we identified four primary processes of change: responding to contingencies, watching oneself, watching others, and listening to others. We review each of these in turn.

##### Responding to Contingencies

One of the most simplistic yet powerful theories of change is the notion that people respond to reinforcers and punishers and that by doing so they change their behavior. As long as these environmental contingencies are in place, then

new behaviors are thought to be maintained. The contingencies that people respond to can be either explicit or implicit. Explicit contingencies come in the form of concrete contingencies applied to a person's behavior where that person is aware of the change agenda. Implicit contingencies are more subtle and come in the form of unspoken expectations and demands that often come with the acquisition of new social roles (Sarbin, 1964).

The most direct form of explicit contingency is a parent's attempt to shape a child's behavior. For example, Kagan's (1994) work on behavioral inhibition demonstrates the interplay between parental attempts to shape a child's personality and the child's biologically and genetically based temperament. Behaviorally inhibited children experience greater levels of distress at lower thresholds when confronted with novel situations. Although childhood behavioral inhibition has been related to possessing traits of Shyness, Introversion, and Neuroticism in adulthood, not all inhibited children become shy adults. Several parental interventions on the part of inhibited children can shape whether an inhibited child becomes an introverted adult. Parents who expose their inhibited children to novelty and provide firm and consistent limits and do not overprotect their children from novel situations may help children overcome behavioral inhibition (Kagan, 1994). In contrast, many parents respond to their child's distress in novel situations by rewarding the child for avoiding these situations in the future. The reinforcement of these avoidance behaviors inadvertently promotes continued behavioral inhibition (Gerlsma, Emmelkamp, and Arrindell, 1990) and may increase the likelihood that the child grows up to become an inhibited adult. Likewise, different parenting socialization practices interact with childhood temperament in the development of Conscientiousness (Kochanska, 1991). Fearful children are more likely to internalize regulators of conduct when mothers use subtle, gentle, psychological discipline. Fearless children, in contrast, do not respond well to increased socialization pressures; rather, they tend to develop stronger internalization in response to a mutually positive and cooperative orientation between themselves and their parents (Kochanska, 1997).

Implicit contingencies are often communicated through the acquisition of roles or positions in a group, community, or society. Implicit contingencies are thought to shape behavior, and

thus personality, by defining the appropriate way to play a role (Sarbin, 1964). Roles such as being a leader or follower come with specific expectations and demands for appropriate behavior that are known to the person assuming the role and to the people watching that person. For example, Sarbin and Jones (1955) asked respondents to describe their expectations for the manager role. Across several groups the respondents agreed that managers should act industrious, serious, stable, intelligent, fair-minded, tactful, and reasonable. Thus, a person who is impulsive by nature would be expected to set aside his or her predilection to make snap decisions if he or she assumes the role of manager in an organization. Exposure to these implicit role demands over a long period of time may be one factor contributing to personality change (e.g., Roberts, 1997).

Obviously, behaviorist notions of shaping personality directly through parenting styles or role pressures can be overly simplistic. Nonetheless, behavioral models of change are still the most elegant and powerful factors that influence change in a person's behavior and subsequent change in personality. The factors most often missing from behaviorally derived socialization models have to do with the cognitive and volitional aspects of personality. A discussion of these factors follows.

### Watching Oneself

In addition to the press of the environment on behavior, one of the critical moderators of change is whether people have the opportunity to reflect on their own actions. For example, many efforts aimed at changing patients in a therapeutic situation focus on promoting insight into maladaptive behaviors. Psychodynamically oriented therapists establish a level of transference in which the patient's unconscious proclivities then arise. Once the maladaptive unconscious drives are identified, a therapist may then attempt to make the patient aware of these patterns in order to strengthen the ego's capacity for more adaptive alternatives. Likewise, cognitively oriented therapists attempt to identify problematic thoughts and replace them through cognitive re-education with more adaptive schemas, scripts, or interpretations of day-to-day events (see Messer & Warren, 1990, for a review). In essence, much of what goes on in therapy is an attempt to shift people's focus to watch themselves more closely in their daily lives. By gaining

insight into their behavior, clients can then direct their efforts toward acting differently in future situations.

Change is also thought to come about through watching oneself act differently in new situations or in response to new contingencies. Thus, change comes about through a combination of environmental contingencies and self-insight. The most intensively studied model consistent with this position is Kohn and Schooler's (1983) learning-generalization model. Like the socialization models, the first key position of the learning-generalization model is that one's psychological makeup changes in response to the specific pressures and demands of roles, such as work and parenting. Where the learning-generalization approach goes beyond behaviorism is in detailing the process through which contingencies are shaped by cognition. Personality is thought to be shaped by role experiences through the internalization of role demands into one's self-concept (Deci & Ryan 1990). This introjection process is facilitated when people draw conclusions about themselves by watching their own actions. For example, if taking on a supervisory role entails less personal connection to coworkers and subordinates, then supervisors may see themselves acting less friendly with subordinates, which they then interpret as a lack of interpersonal connection and diminished sociability (Howard & Bray, 1989).

Invariably the experiences that one watches oneself go through in specific contexts during the internalization process will then be generalized to other domains of life. For example, if a woman becomes more self-directed at work, she will become more self-directed in her marriage and her leisure activities. Kohn and Schooler (1983) report evidence to support the generalization effect, showing that men in intellectually demanding careers increased their engagement in intellectually stimulating leisure time activities.

### Watching Others

Another significant source of information and learning comes through watching others, such as parents, teachers, coaches, and mentors. This approach to change is consistent with a social learning perspective that multiple information-processing mechanisms are involved in the acquisition of new behavior (Bandura, 1986). Bandura's (1965) Bobo doll experiments constitute some of the most elegant studies illustrating the

human capacity to acquire behavioral potential through simply watching others, especially role models, and further illustrate the importance of combining observation with implicit or explicit reward structures for the behavior to be expressed (see also Bandura, 1986).

The most likely sources of observational learning are parents and significant role models. For example, the child's opportunity to watch their parent's work and how they approach their job may influence the child's own choice of career. Research on vocational interests appears to support this claim, showing that a child's vocational interests are related to the values that parents hold (Holland, 1962). Fathers who value curiosity in their sons have sons who peak on the Investigative and Artistic scales of Holland's Vocational Model (Holland, 1996). Of course, these covariations between parent and child values could be explained in part by the heritability of vocational interests (Bouchard, 1995).

In work contexts, observational learning is afforded through relationships with mentors (Chao, 1997). Mentorship reflects an intense work relationship between senior and junior members of an organization (Kram, 1985). One of the major functions of mentors is to demonstrate role appropriate behaviors and how to behave effectively in the organizational setting. Although there are few longitudinal studies showing that change comes about because of the mentor relationship, outcome studies that compare mentored versus nonmentored workers show some of the potential socializing effects of observing a role model. Riley and Wrench (1985) found that mentored women reported higher levels of career success and satisfaction than nonmentored women. Chao, Walz, and Gardner (1992) found that mentored engineers and managers experienced more job satisfaction, greater understanding of organizational norms and goals, and higher salaries.

### Listening to Others

A critical source of information about ourselves, and subsequently a potential source of change, are the people with whom we interact and the feedback they provide to us. This is the primary thesis of symbolic interactionism (Blumer, 1969) and identity theory (Stryker, 1987). Symbolic interactionism emphasizes the meanings that individuals attribute to experience. These meanings are thought to be derived primarily through social interaction (Blumer, 1969).

Identity theory translates the sociological system of symbolic interactionism from the level of society to the level of the individual. According to identity theory, people develop meanings about themselves through receiving feedback from other individuals (Stryker & Statham, 1985). This feedback, described as reflected appraisals, can be either congruent or incongruent with a person's self-perceptions (Kiecolt, 1994). Burke (1991) proposed that when reflected appraisals are incongruent with people's self-perceptions they change their behavior in order to change the reflected appraisals. Thus, when people receive new feedback concerning their personality, either through the changes in their friends' or spouses' opinions or through exposure to new social groups, people will be more likely to change.

Unfortunately, the empirical database showing that listening to others contributes to change is lacking. Rather, the most provocative research in this area, provided by Swann (1987), shows that people tend not to listen to others if it means changing their self-perceptions. In an ingenious series of studies, Swann has shown that (1) people search out feedback that confirms their preexisting self-perceptions, (2) people prefer to associate with others who confirm their self-perceptions, and (3) this process is relatively independent of the evaluative nature of the feedback. That is, people with negative self-perceptions prefer to hear from others that they are seen as neurotic and depressed than hear that they are seen as happy and upbeat (see also Swann, Stein-Seroussi, & McNulty, 1992). Most of Swann's research has been cross-sectional. We still do not know the long term effects of being given feedback by significant people in our lives, such as spouses or respected coworkers, that contradicts our closely held self-views. It may be that persistence on the part of spouses, friends, and coworkers may lead to some personality change.

### CONCLUSION

We set out to answer five questions about personality continuity and change across the life course. From the answers provided in this chapter, we now derive several working hypotheses and suggestions for future research.

First, in contrast to earlier reviews that emphasized the discontinuity of personality development during the early years of life, recent evi-

dence indicates that there is modest continuity from childhood to adulthood. As researchers begin to take seriously the temperamental basis for personality, and as more participants in ongoing longitudinal studies "come of age," better estimates of continuity from the first 3 of years of life onward will become more widely available. The next step will be to link this emerging body of predictive evidence with explanatory accounts of how these long-term predictions come about.

Our second working hypothesis appears to contradict the first. While discontinuity has been the major theme of research on childhood personality development, extreme continuity has been the theme of research on adult personality development. Although the evidence does not support the conclusion that personality traits become fixed at a certain age in adulthood, the evidence is consistent with working definitions of personality traits as "relatively enduring."

The third topic addressed in the chapter dealt with the balance between continuity and change across the life course, and the evidence here favors a cumulative continuity model. With time and age people become more adept at interacting with their environment in ways that promote the consistency of personality. Personality becomes more consistent with age, reaching a peak of consistency in the fifth or sixth decade of life. This is not to downplay the importance of environmental factors in adulthood or to argue that change does not occur throughout midlife. Ample evidence shows that social contexts, role experiences, and changing historical and cultural norms affect personality development. But when pitted against one another, the forces of consistency outweigh the forces of change, and with time and experience the battle between change and consistency is won out by the forces of continuity.

Our final hypothesis is that mechanisms of continuity and change are not simply the flip side of the same coin. Rather, these are separate mechanisms that can work at any time to engender continuity and change. For example, people often attempt to select environments deemed suitable to their personality and by doing so reinforce continuity. Inevitably, these new environments may also bring with them some role demands that may force a person to change, even in subtle ways. Restated, it is not likely that new environments—even when proactively selected—will fit perfectly, and the imperfections may be manifest in role demands that lead to personality change.

Our working hypotheses lead to three recommendations that we hope will make easier the job of those who prepare the next edition of this chapter. First, researchers must be explicit about the types of continuity and change they study. We identified five types of continuity and change, each of which assesses somewhat different perspectives on personality development: differential, absolute, structural, ipsative, and coherence. Much of the confusion over the changeability of personality in adulthood is attributable to the imprecise use of the terms continuity and change. Second, we need active longitudinal research programs. To date, most research on personality change has been either passive and longitudinal or experimental and cross-sectional. We now need studies that couple interventionist strategies with longitudinal approaches in order to understand whether active attempts to change personality stick. For example, it is common practice in business to subject managers to extensive training in an effort to make them more effective leaders. How well do these interventions work? If a derailed manager is successfully rehabilitated, what types of changes have occurred? Do they go beyond simple behaviors to more substantive dimensions of personality? The same approach could be taken within clinical psychology. It would be informative to track changes not only in clinically relevant constructs, such as depression and anxiety, but also in personality traits related to these dimensions of psychopathology. Finally, longitudinal studies must be more inclusive and track the development of personality dimensions other than traits. Although the five-factor model has captured the longitudinal imagination, the constructs associated with evolutionary psychology, as well as "middle-level constructs" such as personal goals and motives, need to be integrated into longitudinal research programs to more fully map the course of personality development across the life course.

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