Venturing a 30-Year Longitudinal Study

Jack Block and Jeanne H. Block
University of California, Berkeley

Longitudinal inquiry has long been recognized as a uniquely powerful method for seeking understanding of psychological development. A 30-year longitudinal venture is described—its theoretical motivation, methodological rationale, and details of implementation. Some of the novel and implicative findings the study has generated are briefly described. Common to all of the results is an absolute reliance on long-term, widely ranging, independent data. Although specific aspects of the study have appeared over the years, its intentions and scope are recounted only here. By and large, the organizing constructs of ego-control and ego-resiliency find impressive support in various empirical inquiries, here quickly described. Methodologically, a number of savvy research procedures useful and perhaps even necessary in longitudinal research are conveyed. The troublesome burdens but ever-alluring attractions of longitudinal inquiry are noted. A forthcoming Web site will contain the extensive 30-year longitudinal data bank together with explanatory information. Psychological investigators may find these imminently available data resources useful.

Keywords: longitudinal, ego-control, ego-resiliency, multimeasure, multiperiod

How does one look back on a 30-year longitudinal inquiry? In self-evaluating so prolonged a scientific study of personality development, there inevitably is nostalgia and, certainly, distorted self-rationalization. One's opinions are, after all, only opinions; myriad other views inevitably abound in so multitudinous and ever-changing a scientific pursuit. Additionally, over the last generation or so, there have been appreciable developments in developmental psychology, and the personalities representing personality psychology have shifted as well. Yet it may still be useful to lay out the research orientation that shaped our study and that still may have relevance for potential investigators motivated by similar enduring questions and issues.

The layperson is often surprised by what it is that many scientific psychologists do, because their work seems frequently to be far removed from the common understanding of the word *psychology*. Lay interest in psychology focuses on very different matters—on homely human concerns, hopes, fears, pleasures, and sadnesses; on the ways and experiences of living; on why people, in their everyday existence, do what they do and feel what they feel.

In particular, when laypersons reflect historically on their own lives or the lives of other people, they ask such poignant questions as these: Is the set of character fixed early or late or never? Is the parenting a child receives influential in shaping how, as an adult, life is lived? Can especially fortunate or tragic or otherwise engaging life outcomes be anticipated early on? What are the conditions and consequences of personality change? Do we all proceed through the life course in more or less the same way, or are alternative, psychologically tenable routes taken? If so, why? What are the pushes and pulls, the surges and the abatements characterizing the inexorably encountered stages of a human life? What are the adaptive functions, common and different, by which individuals respond to and act upon their changing world and changing self-recognitions? In short, and simply put, the layperson wishes to know this: Why do people turn out the way they do?

Questions such as these—responding to persistent human wonderings—lie behind the wide and demanding lay interest in psychology. These lay questions are fair questions, ultimately, even if they are sometimes ingenuously framed.

For various reasons, some of them doubtless overdetermined, it seemed to us worthwhile to study people in the large—as they exist in their natural and real world—and the ways and the whys of their differences. And to satisfyingly pursue this goal, the longitudinal study of personality development seemed to us the compelling approach.

Longitudinal studies, once embarked upon, perhaps inevitably become career investments of great personal significance and meaning to the career investors. The commitment of self to so protracted a research enterprise runs the risk of distorting and subverting the subsequent scientific possibilities of the inquiry. It is also the case that such cathexis is required if the venture is to be carried through with care to a time of fruition and of harvest of what can be known, in psychology, no other way. Of course, no one longitudinal study will answer all the questions of developmental psychology, but also there is no alternative scientific approach that can begin to discern and disentangle the specific influential factors conjoining, interweaving, and reciprocating with each other as the individual reaches

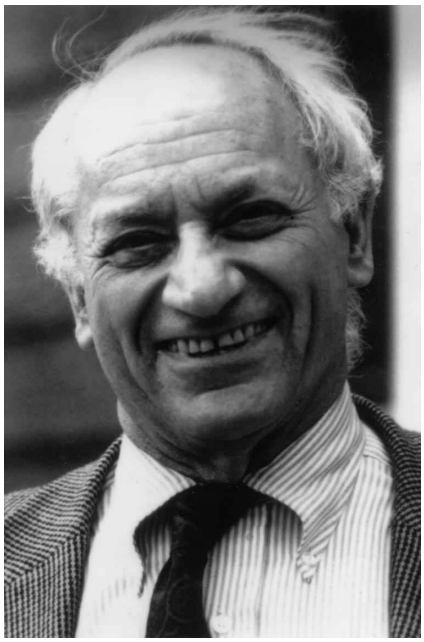
Jack Block and Jeanne H. Block, Department of Psychology, University of California, Berkeley.

Jeanne H. Block is now deceased.

The study described was supported by National Institute of Mental Health Grant MH 16080 to Jack and Jeanne H. Block.

Correspondence concerning this article should be addressed to Jack Block, Department of Psychology, Tolman Hall, University of California, Berkeley, CA 94720-1650. E-mail: jblock@socrates.berkeley.edu

Vol. 61, No. 4, 315–327 DOI: 10.1037/0003-066X.61.4.315



Jack Block

out to life, is enveloped by circumstance, and forges character. When developmental or personality psychologists deign to observe a few conveniently accessible behaviors—here and there, now and then, for a moment or two—we are likely to be touching upon or sampling rather little of the basis for comprehending a human life. It is the special merit of the longitudinal approach that by its scope, by its persistence, and by its analytical orientation toward the study of lives through time, it can perhaps permit a greater understanding of why it is that people turn out as they do.

In 1968, we committed ourselves to a longitudinal study of personality development. For a variety of reasons—each itself insufficient but in aggregate compelling—it seemed like the thing to do and the time to do it. We had both become powerfully impressed by the logic and unparalleled possibilities of the longitudinal approach; we were interested in studying developmentally for the first time two personality constructs—ego-control and ego-resiliency—that, from graduate school days, we had conjectured to be of central theoretical and behavioral importance; we felt we were old enough and young enough—old enough to have developed the necessary cautionary perspectives on so risky and so difficult a research enterprise and young enough to be able to look forward optimistically to an abundant scientific harvest; we were smart, energetic, and aspiring; and we were beyond the tenure trap, because one of us already had tenure, and the other had received a National Institute of Mental Health Career Development Research Award. Perhaps most important, we danced very well together.

Personality Research in 1968

It provides context for our study to recall the central issue confronting personality psychology during the watershed year in which we began our venture. Mischel's (1968) astonishingly influential *Personality and Assessment* had just appeared, wherein he argued there was little point in maintaining interest in the concept of personality. His "clear conclusion," presented as empirically driven, was that "behavioral consistencies have not been demonstrated, and the concept of personality traits as broad response predispositions is thus untenable" (Mischel, 1968, p. 146). Moreover, and of especial interest, Mischel's (1973) gloomy view regarding the possibility of finding behavioral consistencies even extended to his own preferred cognitive social learning approach: "The discriminativeness and idiosyncratic organization of behavior are facts of nature, not limitations unique to trait theories" (p. 265). Reasoning that the behaviors of an individual are exquisitely and uniquely dependent on or controlled by discriminated features of the situations encountered, Mischel argued that no broad ways of understanding individuals could prove useful. This line of argument, enthusiastically received by social psychology, effectively discouraged the study of personality.

In developmental psychology, Kagan (1976) further extended the Mischelian argument by adding the dimension of time: Discontinuity rather than continuity was said by him to characterize character development; there were no or few long-term implications of the early years for the later years. Kagan too pointed to weak evidence from empirical studies of developmental continuities. From the claim that the concept of personality was not especially useful, there was now also the prominent claim that the idea of coherent paths of personality development had no basis. Again, it was contended that knowledge of current stimulus conditions, of the surrounding environment, of normative maturation at different rates, of the immediate pushes and pulls on the individual was all one could, and should, invoke to explain behavior.

In the midst of this discouraging zeitgeist, we committed ourselves to a longitudinal venture. We were moved to this commitment because of a belief that there was indeed an essential coherence, a deep structure to personality functioning and personality development. Sure, it was crucial to recognize the important ways in which the immediate environmental context influenced behavior, as personality psychologists Henry Murray (1938), Kurt Lewin (1946), Robert White (1959), and others much earlier had observed. But stimulus situations alone could not provide, we believed, a sufficient basis for understanding behavior. Human beings were not simply linear response systems, effectively at the mercy of situations that happen to be encountered. Along with making exquisite and unique discriminations, humans also develop broad and adaptively functional, consistently applied generalizations. These constructed generalizations are shaped by humans' common evolutionary heritage, by modal perceptual and action patterns, and by commonly encountered environmental contingencies. Because of these ontologically evolved generalizations, individuals vary reliably and meaningfully and can be usefully studied regarding the ways they perceive and react to their worlds. We believed, 35 years ago, that

Jeanne H. Block

the then generally dismal empirical evidence for this proposition proved only that the underlying coherence had not been sought well or evaluated knowledgably. In particular, we believed that coherence of behavior would not be found if one looked for expressions of personality consistency and continuity in ways that were conceptually obtuse, methodologically insufficient, or empirically constrained. We thought the field could do better, and we wanted to give it a try. We were by no means certain, in our optimism, that our faith would be fulfilled. We were certain, however, that those who would not try for coherence would not lead the way to understanding.

Desiderata for Our Longitudinal Study of Personality Development

We sat down a number of evenings to list some desiderata for a longitudinal study of personality development. And gradually, in excitedly interactive thinking about what had been done in the past and what could be done in the then future, there evolved a set of criteria shaping our effort.

1. Our longitudinal study would be an intentional rather than an unplanned-for study, subsequently belatedly declared a longitudinal inquiry. Of course, intentionality was no protection against making our own mistakes, but it did permit prudent forethought and avoidance of initial errors of the past.

2. Our longitudinal study would make public and communicable to later investigators just what was done during the course of the study—our rationales, how observations were made, how categories or numbers were generated and analyzed, and therefore on what our conclusions and interpretations were predicated.

3. Our longitudinal study would be sufficiently extended in time that developmental processes, continuities, and changes might be discerned. There was not much point to a study so brief it could not track development. The plan and aspiration was to carry through a long-term study from early childhood (age 3 years) through adolescence and into young adulthood.

4. Our longitudinal study would involve a sample of reasonable initial and continuing size and of reasonable relevance, seen at a number of aptly selected developmental times. Given the omnipresent noise in assessment measures, a sample size sufficient to permit discernment of relations would be crucial if this difficult game was to be worth the candle. Both genders would be studied; they would either provide cross-validation of our analyses or, perhaps, evidence of important gender differences.

5. Our longitudinal study would seek to be comprehensive in coverage of its selected conceptual domains. The effort would involve close psychological inquiry; with continuing assessments of the same participants, the opportunity would devolve of relating within one continuing sample research approaches that are usually kept separate. Thereby, fruitful linkages among bodies of psychological research might be established. We expected to spend appreciable time with each participant during each assessment, for, as Robert White once informally remarked, one must look at personality in order to study it.

6. Our longitudinal study would aspire to methodological craftsmanship in its implementation. We viewed the primary problem in previous longitudinal research as *not* making "good quality" data. Elaborate statistical analyses or complicated research designs would prove fruitless if they depended on unreliable measures or measures unsupported by construct validity.

7. Finally, our longitudinal study would have a conceptual rubric shaping its doings rather than being blandly or blindly eclectic. Here, it is necessary to convey some conceptual matters greatly influencing the enterprise. At Stanford in the late 1940s, we had been excited by functional psychoanalytic writings (Fenichel, 1945) and Kurt Lewin's (1935, 1946) conceptualizations. Stimulated by these ideas, we formulated a model of personality that could be mapped onto a wide range of behaviors. The model centered on two fundamental constructs that we termed *ego-control* and *ego-resiliency*.

By ego-control, we meant the individual's modal or characteristic response to behavioral or attentive impulses. An individual relatively expressive or attentive to internal pushes and pulls (e.g., with immediate and direct expressions of behavior or attention, spontaneity, transient motivations, unconventionality, fast tempo, overinclusion in considering choices, unbothered by ambiguities) was termed an *undercontroller*. An individual relatively constricted in behavioral or attentive impulses (e.g., delaying of gratification unduly, behaviorally and perceptually constrained and disciplined, emotionally unexpressive, uncomfortable with uncertainties, categorical, conforming, perse-

verative, with narrow and unchanging interests) was termed an *overcontroller*.

By ego-resiliency, we meant the individual's adaptive reserve, a dynamic ability to temporarily change from *modal* reaction or perceptual tendencies to reactions and percepts responsive to the immediately pressing situation and, more generally, to the inevitably fluctuating situational demands of life. In particular, the ego-resiliency construct entailed the ability to, within personal limits, situationally reduce behavioral control as well as to situationally increase behavioral control, to expand attention as well as to narrow attention, to *regress in the service of the ego* as well as to *progress in the service of the ego*. In the resilient individual, behaviors were regulated through effective adaptation to the evocative quality or contextual cues afforded by the existing situation. The ego-resilient individual could shift behaviors, had available a versatile set of cognitive and social procedures in the search for adaptation, could both assimilate and accommodate, was deliberative but not ruminative, was quick to adapt, was able to plan and work for a distant goal, and was also able to relax and relish enjoyment when circumstances suggested and permitted. The relatively unresilient or vulnerable individual displayed little adaptive flexibility, was disquieted by the new and altered, was perseverative or diffuse in responding to the changed or strange, was made anxious before competing demands, and had difficulty in recouping from the traumatic.

Under various banners, a number of later thinkers suggested two rather similar notions to ego-control and ego-resiliency. With regard to ego-control, some intrinsically related conceptual efforts, linked to one end or other of the ego-control continuum, were *externalization* and *internalization* (Achenbach & Edelbrock, 1989), *underregulation* (Baumeister, Heatherton, & Tice, 1994), *emotional reactivity* (Carver & Scheier, 1998), *self sentiment control* (Cattell, 1957), *novelty-seeking* (Cloninger, 1986), *hesitation* (Doob, 1990), *extraversion* (Eysenck, 1970), *psychoticism* (Eysenck, 1981), *thrill-seeking* (Farley, 1986), *self-control* (Gough, 1987), *impulsivity* (Barratt, 1965; Dickman, 1990; Fowles, 1994; Gray, 1987; Revelle, 1987), *behavioral inhibition* (Kagan, Snidman, & Arcus, 1993; Rothbart, 1989), *reflection–impulsivity* (Kagan, 1966), *inhibitory control* (Kochanska, Murray, & Coy, 1997), *compliance* (Kopp, 1982; Polivy, 1998), *willpower* (Metcalfe & Mischel, 1999), *delay of gratification* (Mischel, Shoda, & Rodriguez, 1989), *strong/weak control of behavior* (Pulkkinen, 1988), *temporal discounting* (Ainslie & Haslam, 1992; Rachlin & Raineri, 1992), *the ability to inhibit thought and action* (Logan & Cowan, 1984), *emotion control* (Roger & Najarian, 1989), *reactivity* (Rothbart, 1989), *hyperactivity* (Taylor, 1998), *constraint* (Tellegen, 1985), *behavioral disinhibition* (Watson & Clark, 1993), *restraint* (Weinberger & Schwartz, 1990), and *sensation-seeking* (Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1994), to name but a few. The common element in this welter of labels is that they all related to the way action and reaction are monitored—by degree of restraint or expression.

With regard to ego-resiliency, some later conceptual efforts were *the central executive* (Baddeley, 1986), *metacognitive components* of intelligence (Brown, 1978; Sternberg, 1985), *emotion regulation* (Campos, Campos, & Barrett, 1989; Shields & Cicchetti, 1997), *social intelligence* (Cantor & Kihlstrom, 1987; Keating, 1978), *self-regulation* (Carver & Scheier, 1998; Kopp, 1982), *constructive thinking* (Epstein & Meier, 1989), *regulatory control* (Fabes & Eisenberg, 1997), *the left-brain interpreter* (Gazzaniga, 1989), *executive functions* (Barkley, 1997), *action control* (Kuhl & Kraska, 1989), *decision and adaptive systems* (Kosslyn & Koenig, 1992), *response modulation* (Patterson & Newman, 1993), *attentional and effortful control* (Posner & Rothbart, 1992), and *emotional intelligence* (Salovey & Mayer, 1990), among others. These various terms are of diverse origin, but all were proposed to connote and denote the quite remarkable phenomenon of human adaptability.

These two thematic clusters—inhibition–uninhibition and resourceful adaptiveness—warrant closer psychological consideration.

For many, the first cluster generally has been viewed as reflecting *self-control* and is valued as socially desirable; when viewed oppositely, it is construed as reflecting socially unacceptable *impulsivity*. However, from a personological standpoint, evaluative labels are theoretically limiting. Thus, although it may be psychologically undesirable to be extremely impulsive, it is also psychologically undesirable to be extremely controlled.

The ability to delay gratification or to resist attention distractions has obvious task-effective implications. But also, such controlled behavior—if extreme (i.e., overcontrolled)—may result in categorical delaying of gratifications or reflexive rejection of interferences regarding matters both relevant and importunate. Inhibitory control may also, in many contexts, influence behavior to be rigid, unexpressive, routinized, and flattened in affect. Such extreme self-control cannot be conceptually viewed as personally estimable, although it may not be societally apparent as maladaptive.

Conversely, the negatively evaluative term, *insufficient self-control*, fails to recognize that in many contexts such "insufficient" self-control is the basis for openness to experience, for flexibility, for expressions of interpersonal warmth, and for creative perceptions or recognitions. There are many life situations in which spontaneity rather than self-control is psychologically desirable, in which expressiveness is positively adaptive, enhancing the experience and savoring of life.

Because of the virtues and dangers of increased self-control and the dangers and virtues of lessened self-control, it is logically necessary conceptually to label this fundamental bipolar dimension neutrally. Contrary to other conceptions, the construct of ego-control explicitly acknowledges *both* the positive and the negative implications associated with each end of the underlying continuum (J. Block, 1950; J. H. Block, 1951).

The second cluster of terms, all broadly mindful of ego-resiliency, may be summarily considered as reflecting *self-regulation* or *emotional regulation* (e.g., Carver & Scheier, 1998; Eisenberg & Fabes, 1992; Kopp, 1982). However, *regulation* per se conveys an uncertain meaning. It is often unclear whether this term means dynamic and resourceful adaptability or—instead and only—increased behavioral control and perhaps even overcontrol.

In addition to this conflation, there is a further theoretical difficulty with *regulation*. Psychologically adaptive regulation often calls for a *reduction* of behavioral control rather than its increase. There are occasions (e.g., brainstorming, sexual circumstances, experiencing art or music, vacations) when behavioral control per se is psychologically maladaptive. One does not wander onto a Mexican beach dressed in a business suit and with a schedule in mind.

Adaptive regulation therefore does not necessarily mean a move toward restraint. The conceptual commingling of ego-control (personal constraint vs. personal release) and ego-resiliency (adaptation vs. maladaptation) can be a fatal conceptual flaw. There are curvilinear connections between the two constructs. Failure to recognize the nature of their relation can lead to misunderstandings in psychological thinking and its subsequent empiricism.

Given these recognitions and a longitudinal context, we anticipated that the usefulness of these theoretical constructs and distinctions could better be seen when a wide array of relevant behaviors were evaluated over time; a longitudinal study did not need to forsake all theoretical pursuits. We also were aware that our study—any study—would be unable to respond to many developmental questions.

Taken together, the desiderata for our longitudinal study represented a grandiose, even adolescent ambition. We cannot claim that all these worthy goals were achieved. But such were the standards we set out. It is left to others and another time for evaluation of how well these aspirations were met.

What Indeed Did We Do?

We began with 128 children from two nursery schools in Berkeley, California, a heterogeneous rather than a specialized sample with regard to socioeconomic status, parental education, ethnic background, and risk likelihoods. Extensive individual assessments of these participants were conducted at ages 3, 4, 5, 7, 11, 14, 18, 23, and—most recently but still, importantly, unanalyzed—32. These assessment ages were selected because of our sense of when, developmentally, it would be most relevant to study the participants. At age 23, 104 participants were assessed; at age 32, 94 participants were assessed. The relatively small degree of participant attrition was likely due to the great attention earlier addressed to motivating participants and their parents; to repeated friendly contacts initiated between assessment periods; to our maintaining up-to-date records on participant locations; to our paying the participants a nominal sum for their participation after they entered adolescence; and to our having the prescience to carry out such a study in the San Francisco Bay Area, from which there is a decided tendency not to move.

During each of the first eight assessment periods, every child (or adolescent or young adult) individually experienced an extensive battery of widely ranging and in-depth procedures, involving 10 or 11 hour-long sessions at ages 3 and 4, four or five longer sessions at ages 5 and 7, and six 2-hr (or longer) sessions at ages 11, 14, 18, and 23. In the age-32 assessment, besides gathering life information, the assessment necessarily was restricted to using an extensive personality inventory.

Six planned methodological or design principles characterized our effort:

1. Various kinds of data were used: not just life history, school, or demographic information (which we called *L-data*); not just ratings or evaluations of the participants by teachers, parents, or knowledgeable observers (*O-data*); not just structured experimental procedures or standardized tests (*T-data*); and not just questionnaires or other self-report techniques (*S-data*). All of these various approaches to generating useful psychological information were used. Their empirical interconnections were sought throughout as testimony to their reciprocal import. During the course of assessments, various kinds of L-data were collected from the parents, from school records, and from the participants themselves. A host of T-procedures were used or created. In the early years of the study, such characterological qualities as, for example, the ability to delay gratification or display resourcefulness were inferred from planned evocative situations within which the young child behaved. As the participants moved into preadolescence and became more interiorized, there was a greater use of S-procedures, but T-procedures were further extended to include, among other things, lie detection, adolescent delay of gratification, and videotapings of charade expressiveness.

2. O-procedures were most heavily relied on, as registered by systematic use of the Q-sort method of personality description (J. Block, 1961). In observer contexts, the Q-sort method involves close and prolonged observation of a participant by a trained assessor who then provides a comprehensive character formulation following prescribed rules. Multiple independent assessors were used during each of the eight assessment periods, and they were in a position to observe participants in diverse, often intimate situations and always for appreciable periods. Successive assessments used entirely different crews of assessors so that absolute independence was maintained between the data gathered at each of these different times. The multiple Q formulations from a given assessment time were each independent and metrically commensurate; therefore, they were aggregated to form a composite Q-sort for each participant at that age. This approach had demonstrated attractive efficacy in a previous longitudinal effort (J. Block, 1971) and in other studies as well (e.g., J. Block, 1965; J. Block, Block, & Harrington, 1974; Buss, Block, & Block, 1980; Mischel, Shoda, & Peake, 1988). Although appre-

ciable uncertainty may characterize the personality formulation expressed in any single Q-sort, studies have shown that a composite based on multiple independent Q-sorts has substantial reliability and, in a variety of applications, displays nomological validity.

3. Multiple measurements within each kind of data were often used to achieve dependability and generalizability of our measures. For example, instead of measuring the fidgetiness of a child by a single behavioral time sample, we measured fidgetiness via a number of week-separated time samples, which were subsequently averaged. As expected, the aggregated index displayed much better reliability and, thus, was enabled to display appreciable relations with other variables. This strategy was variously applied to the Stroop test and to measures of blood pressure, heart rate, and absorption, among other things. When measures were not sensibly repeatable—as when a broad construct such as style of categorizing or conservatism versus liberalism was studied—the conceptual domain was sampled via diverse measures, then aggregated to rise above the problem of method variance.

4. With the many, many variables accumulated, various data-reduction procedures were used, including factor analysis, regression analysis, hierarchical linear modeling, the averaging of standard scores derived from variables (all conceptually or empirically linked), and the generation of prototype scores (J. Block, 1961) to reflect how well a constellation of obtained scores fit a conceptual criterion. Sensitive to the problem of chance significance, we often applied a version of the resampling or bootstrap method (J. Block, 1960; Simon, 1999). The most persuasive way to report findings, however, was to seek (and, often, to find) convergence of relations from different kinds of data sets and from different times of assessment.

5. Data for the two sexes were routinely analyzed separately, for methodological and value-based reasons. Over the years, one half of the human race had not been well represented in longitudinal studies. We anticipated, and then observed, that it was crucial to do so. When the same pattern of findings characterized both boys and girls and/or young men and young women, there was of course a cross-validated result. But when, as happened surprisingly often, reliably different correlation patterns characterized the two sexes, a differential gender finding aroused attention and had implications. It is worth noting that when, over the years, differences between the sexes emerged, these differences were evident not so much in respective mean levels as in the differences in the correlation patterns characterizing the two sexes.

6. Because of the planned duration of this longitudinal study, various future criteria were anticipated as criteria for identifying early antecedents of subsequent behavior. Following psychological development over the years was centrally informative, but we also looked forward to the time of rising adult stratifications when we could then look backward to perhaps discern any childhood origins. (There now follows an inundating listing of the measures, procedures, and situations experienced by participants over the years. The reader should not try to truly absorb the sense of the many measures so tersely mentioned or the reasons for their inclusion; recognizing the scope and ambition of the effort is all that is needed here.) Thus, we used measures of activity level; delay of gratification; distractibility; vigilance; exploratory behavior; motor inhibition (Simon Says!); susceptibility to priming; satiation and cosatiation; planfulness; curiosity; instrumental behavior when confronted by barriers or frustrations; dual focus (the ability to split attention); susceptibility to perceptual illusions; risk-taking; level of aspiration; utilization of feedback; divergent thinking and other indexes of creativity; chained word association (to index associative drift); various cognitive styles, such as field dependence–independence; reflection–impulsivity; category breadth; perceptual standards; sex-role typing; egocentrism; physiognomic perception; incidental learning; metaphor generation; short-term memory (via digit span); memory for sentences; memory for narrative stories; moral development; skin conductance when lying; skin conductance when startled; recovery rate from startle; the phenomenology of emotions; free play at age 3 and again at age 11 (patterned after Erik Erikson's approach); self-concept descriptions; decision time and decision confidence in situations varying in the intrinsic difficulty of decision; blood pressure and heart rate in response to a set of stressors; depressive realism; false consensus; and core-conflict relationship themes. We also used the full Wechsler intelligence test at ages 4, 11, and 18; the Raven Progressive Matrices Test; Piagetian measures of conservation; a measure of semantic retrieval; the Lowenfeld Mosaic Test; the Stroop Test; the Kogan Metaphor Test (for metaphor comprehension); Loevinger's sentence-completion measure of ego development; Kelly's Rep Test; the Spivack and Shure Interpersonal Problem-Solving measure; descriptions of ideal self, of mother, of father, and of sought-for love object; enactment of a standard set of expressive situations (videotaped); experience sampling for a week (via a beeper); health indexes; activity and interest indexes; long and intensive clinical interviews (now on DVDs) relating to, among other topics, adult attachment, ways of knowing, and ego development; Diagnostic Interview Schedule screening, so as to connect with the *Diagnostic and Statistical Manual of Mental Disorders* classification system; and hundreds of questionnaire and inventory items relating to a host of personality scales. In assembling and administering this array of procedures, we were continually concerned for the age-appropriateness of the procedures used. We also tried to be attentive to the ongoing psychological literature, introducing into the assessments new topics and au courant measures relevant to our conceptual focus.

Both the mothers and fathers of participants also participated in the study, contributing several kinds of information at various times: their child-rearing orientations, their self-descriptions, their separate characterizations of the child, their responses to a personality inventory, home interviews and characterizations of the home environment,

and videotapes of their interactions with the child during the preschool years and during early adolescence.

As an observation, not a boast, it is likely that there is not another sample in psychology so extensively, intensively, protractedly assessed.

What We Found Out

A little. About 150 publications and 14 theses have come from the study, but as yet, the analytical possibilities residing in the data bank have been only partially drawn upon. Partly, this has been because of the press of longitudinal work. Doing a longitudinal study means wrapping an albatross around one's neck, placing a monkey on one's back, mounting a tiger, and grabbing a bear by its tail. Because we could not stop time, pressures were incessant and took many forms beyond those mentioned in publications (e.g., making curtains for or putting down carpet in a research mobile home, locating a lost participant through the Department of Motor Vehicles). When problems emerged and impinged, and the study depended on our responding to them, it was necessary to do then and there what needed to be done. Before evaluating the full implications of one assessment, it was often necessary to plan and ready another assessment. To maintain funding, articles and chapters needed to be written and judged as sufficiently contributions.

Also, there were unpredictable, inevitable human problems, fluctuations in personal effectiveness at various times and, finally, the intrusion of fundamental health problems. Technically evaluated, it is clear that we could have done better in various ways.

These excuses having been offered, consider now the cumulative effect of a half dozen diverse, nonobvious, perhaps even novel findings, all of which depend crucially on the longitudinality of our data, findings that could not have been established outside of the dimension of extended time. Most of these findings have already appeared in specialized journals rather than in a journal of broad readership; accordingly, they are presented here quickly rather than fully. Fuller presentations can be found in the cited articles. Of course, the work cited is not dependent on us alone; a large number of fine research assistants and often coauthors were also involved.

Self-Concept and Self-Esteem Over Time (J. Block & Robins, 1993)

Psychologists have long studied the self, because a person's self-perceptions are both a reflection of the life that has been led and an influence on the life that will be lived. In our longitudinal inquiry, as participants moved into adolescence and developed an articulated self-reflectiveness, self-report "snapshots" of their evolving self-concepts were sought. Participants provided Q-sort self-descriptions at ages 11, 14, 18, and 23 and descriptions of their ideal self at ages 14, 18, and 23. The same Q-sort was used throughout to ensure commensurability. Self-esteem at a given age was indexed by the degree of congruence between the way a participant described his or her personally perceived self and the way that, a week later, the participant described an ideal self. Conceptually, the extent to which one sees one's self as being similar to one's personal ego ideal is an indicator of one's self-esteem. This congruence, expressed correlationally, had long been effectively used (J. Block & Thomas, 1955; Rogers, 1951).

It is interesting to note, and implicative, that the sexes diverged in self-esteem over time in the period from age 14 to age 18 to age 23. They were equivalent in self-esteem at age 14, differed significantly at age 18, and differed even more significantly at age 23. The mean self-esteem of the boys for ages 14, 18, and 23 rose during these years; the mean self-esteem of the girls for these three ages declined significantly, diverging from those of the boys during adolescence and into young adulthood. The self-esteem of girls showed appreciable continuity from age 14 to age 18 to age 23. However, the self-esteem of boys showed marked restructuring during adolescence and moderate continuity thereafter into young adulthood. For both sexes, self-esteem was virtually uncorrelated with Wechsler Adult Intelligence Scale IQ and was not related to social class.

Personality evaluations of the participants, as made by independent observers, were of course available. For each sex separately, these were correlated with self-esteem. Vis-à-vis self-esteem, observed similarities emerged for the two sexes. Thus, both young women high in self-esteem and young men high in self-esteem were independently characterized as resilient, having rapid tempo, assertive rather than submissive, undiscouraged by adversity, without fluctuating moods, decisive, having a sense of personal meaning, initiating of and responsive to humor, and unpreoccupied with ruminative fantasy. This is an interesting and coherent set of characteristics, and no conceptual problem is posed in seeing how these personality qualities are conducive to or expressive of self-esteem in either sex.

However, there are many instances in which the correlation of self-esteem with separately evaluated personality characteristic in one sex was significantly different from the corresponding correlation for the other sex, suggesting that self-esteem is embedded in somewhat different characterological contexts for the two sexes. Thus, from the standpoint of these gender differences, young women high in self-esteem tended also to be evaluated as relatively warm, giving, protective, sympathetic, gregarious, talkative, conventional, moral, straightforward, cheerful, poised, and interested in the opposite sex. Young men high in self-esteem tended also to be viewed as relatively critical, self-defensive, hostile, keeping of people at a distance, sensitive to demands, concerned regarding their personal adequacy, likely to have unconventional thought processes, and likely to be esthetically sensitive.

Although there is a personality core to self-esteem that is common to both sexes, young women with high self-esteem impressed observers as happily, warmly extroverted and deeply concerned about interpersonal relationships, whereas young men with high self-esteem seemed self-

focused and defensively critical, uneasy, and unready for connection with others.

The Personality of Children Prior to Divorce (J. H. Block, Block, & Gjerde, 1986)

Over the last half century, a number of studies of the effects of divorce have appeared and have had wide influence. Typically, in such investigations, children (usually young adolescents) who have experienced divorce have been studied and (sometimes) contrasted with a control group of children who have not experienced divorce. Reported findings have suggested that boys experiencing divorce are relatively undercontrolled: unsocialized, troublesome, aggressive, and characterized by scattered energy. The findings relating to girls have been unclear or weak, perhaps (conjecturally) because possible effects of divorce in girls are more likely to be seen later on, when these girls have become young women and focused on establishing intimate, long-term relationships of their own.

Because the present study was longitudinal, it was possible to analyze our data in an unprecedented way: boys whom L-data collected later showed had experienced familial divorce—but whom as of *earlier* childhood assessment had not—were compared with boys whom later data showed had not experienced familial divorce. Tellingly, this comparison revealed, via predivorce observer descriptions, that boys who were going to experience divorce sometime in their future, when contrasted with boys who were not going to experience divorce in their future, were characterized by undercontrol: aggressiveness, excessive expression of energy, and generally greater troublesomeness. That is, a finding previously said to be a consequence of divorce existed prior to the fact of divorce. The implication is that a boy's behavioral problems may be present years before family disjunction actually occurs. Indeed, family discord often characterizing the period before parental separation may have serious behavioral consequences for the onlooking boys. This is not to say that the subsequent experiences of divorce, with all the life changes that are entailed, have no additional or special influence on the lives and characters of the children of divorce. It is to say that the examination of families only after divorce has occurred is an insufficient means of comprehending the complex interpersonal processes influencing character development. To approach a more complete understanding of divorce and its subsequent import, it is necessary to study families years before there is a divorce, while the family is still nominally intact.

Longitudinally Foretelling Drug Usage in Adolescence: Early Childhood Personality and Environmental Precursors (J. Block, Block, & Keyes, 1988)

One of the great concerns of our cultural time has been the problem of understanding the factors underlying substance abuse. As would be expected, within the course of the longitudinal study, L-data indicated a number of participants had become involved with some of the drugs widely available in contemporary society.

Concurrently, the degree and kind of drug usage in adolescence proved to be related to observer-evaluated personality characteristics. For both sexes at age 14, the use of marijuana was primarily related to separately evaluated undercontrol, whereas the use of harder drugs reflected an absence of ego-resiliency, with undercontrol also a contributing factor. Overall, the findings were generally substantively similar to findings reported elsewhere in the literature, although the personality concomitants of drug use differed somewhat as a function of gender and the drug used.

Of special interest, however, is the fact that it was readily possible to use the L-data indicators regarding adolescent drug usage to evaluate backward in time—via nursery school observer evaluations—the implication of prior childhood years for later drug usage. In nursery school, subsequent drug usage in girls was related to both undercontrol and lower ego-resiliency; subsequent drug usage in boys was related to their nursery school undercontrol, with their nursery school resiliency having no long-term implications for drug usage. Overall, preschool children subsequently using drugs at age 14 were characterized as undercontrolled: restless and fidgety, emotionally labile, unobedient, lacking in calmness, domineering, behaving immaturely when under stress, reluctant to yield and give in, aggressive, overreactive to frustration, teasing, and unable to recoup after stress. Early family environment proved to relate to subsequent adolescent drug usage in girls but, interestingly, not in boys. These very early antecedents of drug usage have large import for contemporary views regarding adolescent drug usage and, consequently, for social policy. It appears that the roots of adolescent substance abuse are discernible, and perhaps modifiable, in early childhood.

Personality Antecedents of Depressive Tendencies in 18-Year-Olds (J. Block, Gjerde, & Block, 1991)

Depression is a major human problem. Understanding why certain individuals are especially susceptible to depressive moods whereas others cheerily go through life is an important psychological goal.

In our longitudinal study, at age 18, reliable individual differences in depressive tendencies had been evidenced by L-data, by observer evaluations, and by self-reports. The logic of longitudinal study obviously then suggested seeking early antecedent factors associated with this fundamental mood disorder. Depressive tendencies identified in young adulthood, with the somewhat correlated contribution of anxiety removed, were related to prior observer-based evaluations. Many significant correlations—coherent within each sex but gender specific—were found going back to middle and even early childhood. Depressed young women had been evaluated at age 7 as manifestly overcontrolled: shy and reserved, oversocialized, and intropunitive. Depressed young men had been evaluated at age 7, and

even as early as age 3, as relatively undercontrolled: unsocialized, aggressive, and self-aggrandizing. Most implicatively, IQ related in significantly different directions to depression in the two sexes: positively ($r = .25$) to subsequent depression in girls and negatively ($r = -.36$) in boys. These findings are most provocative. Ongoing with age-32 data, these findings are being further evaluated to see if these gender differences persist, with the goal of distinguishing between two kinds of depression—depression precipitated by anguish regarding an unavailable love object and depression precipitated by the individual's sense of ingrained agentic failure.

Personality Antecedents of Political Orientation (J. Block & Block, in press)

Psychologists and political scientists have long been interested in the relations between personality and politics. Our longitudinal study permitted an unusual analysis—ascertaining an adult political outcome and then being enabled to look backward in time.

At age 23, to identify conservative–liberal attitudes, participants had been administered a variety of indicators of political values that, when aggregated, provided a reliable and coherent measure. Relating this measure to independent data collected 20 years earlier, when the participants were in nursery school and not yet political beings, we found many antecedent correlations of subsequent conservatism–liberalism in young adulthood. Preschool children (both boys and girls) who were subsequently relatively conservative at age 23 were described as more likely to be overcontrolled: inhibited, uncomfortable with uncertainty, susceptible to a sense of guilt, and rigid when experiencing duress. Preschool children who 20 years later were relatively liberal were more likely to be somewhat undercontrolled: self-reliant, energetic, having developed close relationships, and somewhat dominating. Some interesting gender differences seemed to exist. Although much more needs to be done to refine and elucidate these analyses, these connections between personality at an early age and adult political orientation obviously have significance for political thought.

Ego-Control and Ego-Resiliency Over Time

Given the conceptual framework underlying the study, a longstanding question had been this: Were children relatively ego-controlled or relatively ego-resilient at an early age relatively ego-controlled or relatively ego-resilient at later ages—in middle childhood, preadolescence, adolescence, and young adulthood? This is not a question about what is so often, unfortunately, called "stability."[1] Individuals may change and, indeed, do change. As a group, our 23-year-olds were evaluated as more controlled and more resilient than they were as 3-year-olds, so they had not been "stable." The question really is this: To what extent, despite all the life experiences accruing over time, do children tend to preserve their relative order with respect to the widely implicative behavioral dimensions of ego-control and ego-resiliency?

There had not previously been developmental information regarding such a centrally important question. As will be remembered, at the inception of the study, the received view of highly influential developmentalists was that no or little continuity of personality functioning existed from early childhood into the later years.

For the longitudinally followed participants, reliable, independent, and comparable observational indexes of ego-control and ego-resiliency had been established through prototype scoring at ages 3, 4, 7, 11, 14, 18, and 23. Prototype scoring (J. Block, 1961) is a well-established method that has earned impressive nomological support over a variety of contexts. By referencing the composites available for each participant at each age, as formulated by entirely separate sets of personality assessors, we gave each participant a congruence score on ego-control and ego-resiliency. Table 1 presents, for the two sexes separately, the ego-control intercorrelations and the ego-resiliency intercorrelations.

Regarding ego-control, the fully independent interage correlations are consistently positive for both sexes. The size of these correlations is perhaps impressively high considering attenuating factors, the great length of time involved, and the many life circumstances potentially fostering personality change. This is strong evidence, replicated across the sexes, that from an early age, individual differences in level of ego-control are identifiable, and these individual differences continue to importantly distinguish people for at least the next 20 years. The informally evaluated age-32 assessment suggests that this continuity exists for another decade as well and, from the evidence of other studies (J. Block, 1971, 1981), even beyond.

Regarding ego-resiliency, the correlations again are consistently positive for the male participants through the years. Many of the correlations are at a level psychologists would consider quite high, especially when the inevitable lowering presence of attenuation is remembered. For boys and young men, these figures provide strong evidence that individual differences in ego-resiliency are indeed identifiable from an early age and largely continue over the next 20 years.

However, the ego-resiliency consistencies for the girls and young women present quite a different picture. In the childhood years, there is reasonable ordering continuity between time-adjacent assessments, with correlations that are positive and even high. From adolescence on, there is again reasonable, even quite impressive ordering continuity between adjacent assessments. But between these two life stages—childhood and adolescence—there is really no relationship. For girls, being resilient (or vulnerable) during the childhood years carries no implication for being ego-resilient (or vulnerable) in adolescence and beyond. There appears to be a radical reordering over time, especially marked as girls enter puberty, obliterating connection be-

[1] The term *stability* applies as well to chronic depression or lifelong schizophrenia.

Table 1
The Longitudinal Consistency of Ego-Undercontrol and Ego-Resiliency

	Age at personality assessment (years)						
Age (years)	3	4	7	11	14	18	23
			Ego-undercontrol				
3	—	.70***	.47**	.22	.40**	.22	.31
4	.82***	—	.56***	.35*	.56***	.42**	.40*
7	.58***	.48**	—	.46**	.66***	.37**	.35*
11	.34*	.53***	.58***	—	.58***	.51***	.47**
14	.49**	.47***	.50***	.74***	—	.72***	.67***
18	.42**	.26	.44**	.43**	.51***	—	.76***
23	.54**	.42*	.31	.46**	.62***	.49**	—
			Ego-resiliency				
3	—	.68***	.19	.19	.00	−.06	.08
4	.65***	—	.38**	−.02	−.28	−.23	−.16
7	.34*	.47**	—	.37**	.28	.21	.07
11	.35*	.46**	.41**	—	.58***	.40**	.21
14	.23	.37*	.42**	.65***	—	.58***	.53**
18	.31*	.47**	.56***	.58***	.60***	—	.56**
23	.22	.42*	.23	.39*	.38*	.54**	—

Note. Results for girls are above the diagonal; results for boys are below the diagonal. Sample sizes for girls ranged from 39 to 52; sample sizes for boys ranged from 37 to 50.
* $p < .05$. ** $p < .01$. *** $p < .001$.

tween level of ego-resiliency in the childhood years and level of ego-resiliency during adolescence and beyond.

What does this gender difference mean? Is it yet another instance of how psychological findings bounce around and are difficult to replicate? Or is this difference between the sexes in their longitudinal ego-resiliency patterns believable and, therefore, seriously implicative and warranting of interpretation?

For added perspective, consider again the ego-control and ego-resiliency results for both sexes. In all four of the analyses, the identical methodology was used. And in three of the four comparisons, appreciable longitudinal continuity of individual differences was observed. Occam's razor suggests that it is difficult to attribute the discrepant ego-resiliency results for girls and young women to methodological or sampling fluctuations. The failure of ordering continuity of ego-resiliency for the female participants (in the larger context of ordering continuity for the male participants and the ordering continuity of ego-control for both sexes) would appear to represent a real finding and not a vagary of data. Some other findings from our longitudinal study further reinforce the view that this difference between the sexes in regard to their longitudinal patterns of resiliency continuity is veridical and cannot be readily explained away (e.g., see the above-mentioned depression findings).

What happens to girls as they leave childhood and move into puberty? One conjecture is suggested by the relations between ego-control and ego-resiliency over time. For boys and young men, over the 20 years from ages 3 through 23, ego-control and ego-resiliency are essentially unrelated, the correlations averaging not quite 0, with little variation. For girls, the relationship between ego-control and ego-resiliency is essentially 0 at ages 3, 4, and 7. However, beginning at age 11, there suddenly appears a substantial negative correlation between ego-control and ego-resiliency. This relationship diminishes somewhat during the subsequent adolescent years and by the early 20s becomes quite low again. But during the preadolescent and early adolescent years, ego-resiliency in girls appears to be appreciably related, reciprocally, to overcontrol. During this reformative period, ego-resiliency in girls goes along with a lessening of overcontrol.

How is this connection between ego-control and ego-resiliency to be developmentally explained? Speculation necessarily is required here; our own interpretation goes along the following lines. The psychological literature on the differential socialization of the sexes indicates that girls grow up in a more structured and directive world than do boys (J. H. Block, 1973, 1983). Girls experience more parental supervision, more restrictions on exploration, more emphases on maintaining proximity, and more frequent (often unnecessary) help in problem-solving situations. For boys, encounters with the world outside the home are both more extensive and less managed. These sex-differentiating influences combine to create a more cana-

lized and predictable environment for girls. These formal differences in the learning environments traditionally provided to girls as compared with boys can be expected to have cumulative, powerful, and general effects on the adaptive strategies invoked when the world in which one has been living changes in fundamental ways.

The onset of puberty—of internal transformations that also transform how the world reacts to one's strangely different, yet internally much the same self—is such a fundamental change. Because of the differential socialization of the sexes (and, likely too, because of the earlier age at which girls become physically mature), the changes catalyzed by puberty may well present a larger and more abrupt adaptational problem for girls than for boys. For girls in particular, the necessary changes require restructuring of previously sufficient modes of adaptation, an emergence from the cocoons of security and restriction in which they have grown up.

The ability to achieve this restructuring is, of course, encompassed by the construct of ego-resiliency as defined and elaborated herein. But also, the leaving of previous constrictive adaptations and a turning away from behavioral perseveration are indicators that the individual is not, or is no longer, so overcontrolled. Thus, girls confronting adolescence who are enabled to display resiliency in their adaptive modes have necessarily also moved away from overcontrol, thus perhaps accounting for the empirical relationships observed.

Coda

Looking back at our longitudinal venture, attempting to chart the lives of participants over time and across circumstance, we have viewed the approach as criterial for the investigation of crucial questions regarding psychological development. However, we have been aware that longitudinal studies sometimes have been criticized as being, by their very nature, sprawling, untidy, costly, difficult to integrate (both with respect to data-processing problems and conceptual matters), and sometimes fruitlessly prolonged.

Such criticisms are true, more or less. How compelling these shortcomings should be seen as depends on the personal inclinations of the investigators. Sprawl also offers reach; untidiness tends to accompany large intentions; considerations of research cost must also be accompanied by considerations of research benefit; data are always troublesome; concepts are difficult to think about; and who is to say, while lives go on, how long a longitudinal study should continue?

Although there certainly are daunting difficulties and uncertainties along the way, the strategy of longitudinal inquiry remains compelling. If it is taken as a given that longitudinal inquiry is logically necessary to study certain developmental questions, then it follows that the vicissitudes encountered by such studies in practice should be acknowledged, understood, perhaps fended off by anticipation, and worked on; they should not be viewed as vitiating. A longitudinal study carried far enough and at a decent level of competence can prove cumulatively contributory to developmental science. Fishing strategy may provide psychologists an apt analogy to consider: If one casts a line only into the shallow waters of a nearby pond, only little fish will be caught. To catch the big fish, it is necessary to venture out into deep water. Psychologists should try for the big fish.

Prospects

In a well-planned longitudinal study, analytical possibilities abound, and—especially in this computer era—the energy and funding costs for each quite different and often rewarding analysis can be quite small. Concepts from different domains can be related; serendipitous recognitions may be pursued. Our unusual longitudinal data bank, described earlier, remains rich in analytical possibilities. So much effort and time was necessarily invested in the sheer mechanics of carrying through the lengthy and overambitious study, the fruits of our labors could only selectively be picked. But many intriguing further findings remain to be harvested, as suggested by the earlier listing of what our participants underwent. Because of the inevitable finitudes of life, we necessarily have had to relinquish our roles as prime movers of the study. A sense of scientific obligation toward data sharing together with the advent of the Internet has suggested placing these computer data, the extensive catalog of measures and variables, and associated information onto a Web site for ready and free access by responsible psychological scientists anywhere. The process of creating this Web resource is well underway. The expectation is that it will be completed within the next year. (Access to this data resource will be through the Henry A. Murray Research Archive, Institute for Quantitative Social Science, Harvard University, CGIS Knafel Building, 1737 Cambridge Street, Cambridge, MA 02138 [http://www.murray.harvard.edu/].) So there may be more to hear yet from the Block and Block Longitudinal Study.

REFERENCES

Achenbach, T. M., & Edelbrock, C. (1989). Diagnostic, taxonomic, and assessment issues. In T. M. Ollendick & M. Hersen (Eds.), *Handbook of child psychopathology* (2nd ed., pp. 53–69). New York: Plenum Press.

Ainslie, G., & Haslam, N. (1992). Hyperbolic discounting. In G. Loewenstein & J. Elster (Eds.), *Choice over time* (pp. 57–92). New York: Russell Sage Foundation.

Baddeley, A. (1986). *Working memory.* Oxford, England: Clarendon Press.

Barkley, R. A. (1997). *ADHD and the nature of self-control.* New York: Guilford Press.

Barratt, E. S. (1965). Factor analysis of some psychometric measures of impulsivenesss and anxiety. *Psychological Reports, 16,* 547–554.

Baumeister, R. P., Heatherton, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation.* San Diego, CA: Academic Press.

Block, J. (1950). *An experimental investigation of the construct of ego-control.* Unpublished doctoral dissertation, Stanford University.

Block, J. (1960). On the number of significant findings to be expected by chance. *Psychometrika, 25,* 369–380.

Block, J. (1961). *The Q-sort method in personality assessment and psychiatric research.* Springfield, IL: Charles C Thomas.

Block, J. (1965). *The challenge of response sets: Unconfounding meaning, acquiescence, and social desirability in the MMPI.* New York: Appleton-Century-Crofts.
Block, J. (1971). *Lives through time.* Berkeley, CA: Bancroft Books.
Block, J. (1981). Some enduring and consequential structures of personality. In A. I. Rabin (Ed.), *Further explorations in personality* (pp. 27–43). New York: Wiley.
Block, J., & Block, J. H. (in press). Nursery school personality and political orientation two decades later. *Political Psychology.*
Block, J., Block, J. H., & Harrington, D. M. (1974). Some misgivings about the Matching Familiar Figures Test as a measure of reflection–impulsivity. *Developmental Psychology, 10,* 611–632.
Block, J., Block, J. H., & Keyes, S. (1988). Longitudinally foretelling drug usage in adolescence: Early childhood personality and environmental factors. *Child Development, 59,* 336–355.
Block, J., Gjerde, P. F., & Block, J. H. (1991). Personality antecedents of depressive tendencies in 18-year-olds. *Journal of Personality and Social Psychology, 60,* 726–738.
Block, J., & Robins, R. W. (1993). A longitudinal study of consistency and change in self-esteem from early adolescence to early adulthood. *Child Development, 94,* 909–923.
Block, J., & Thomas, H. (1955). Is satisfaction with self a measure of adjustment? *Journal of Abnormal and Social Psychology, 51,* 254–259.
Block, J. H. (1951). *An experimental study of a topological representation of ego-structure.* Unpublished doctoral dissertation, Stanford University.
Block, J. H. (1973). Conceptions of sex role: Some cross-cultural and longitudinal perspectives. *American Psychologist, 28,* 512–526.
Block, J. H. (1983). Differential premises arising from differential socialization of the sexes: Some conjectures. *Child Development, 54,* 1335–1354.
Block, J. H., Block, J., & Gjerde, P. F. (1986). The personality of children prior to divorce: A prospective study. *Child Development, 57,* 827–840.
Brown, A. L. (1978). Knowing when, where, and how to remember: A problem of metacognition. In R. Glaser (Ed.), *Advances in instructional psychology* (Vol. 1, pp. 77–165). Hillsdale, NJ: Erlbaum.
Buss, D. M., Block, J. H., & Block, J. (1980). Preschool activity level: Personality correlates and developmental implications. *Child Development, 51,* 401–408.
Campos, J. J., Campos, R. G., & Barrett, K. C. (1989). Emergent themes in the study of emotional development and emotion regulation. *Developmental Psychology, 25,* 394–402.
Cantor, N., & Kihlstrom, J. F. (1987). *Personality and social intelligence.* Englewood Cliffs, NJ: Prentice Hall.
Carver, C. C., & Scheier, M. F. (1998). *On the self-regulation of behavior.* New York: Cambridge University Press.
Cattell, R. B. (1957). *Personality and motivation structure and measurement.* Yonkers, NY: World.
Cloninger, C. R. (1986). A unified biosocial theory of personality and its role in the development of anxiety states. *Psychiatric Developments, 3,* 167–226.
Dickman, S. J. (1990). Functional and dysfunctional impulsivity: Personality and cognitive correlates. *Journal of Personality and Social Psychology, 58,* 95–102.
Doob, L. W. (1990). *Hesitation: Impulsivity and reflection.* Westport, CT: Greenwood Press.
Eisenberg, N., & Fabes, R. A. (1992). Emotion, regulation, and the development of social competences. In M. S. Clark (Ed.), *Emotion and social behavior* (pp. 119–150). Newbury Park, CA: Sage.
Epstein, S., & Meier, P. (1989). Constructive thinking: A broad coping variable with specific components. *Journal of Personality and Social Psychology, 57,* 332–350.
Eysenck, H. J. (1970). *The structure of human personality* (3rd ed.). London: Methuen.
Eysenck, H. J. (Ed.). (1981). *A model for personality.* New York: Springer-Verlag.
Fabes, R. A., & Eisenberg, N. (1997). Regulatory control and adults' stress-related responses to daily life. *Journal of Personality and Social Psychology, 73,* 1107–1117.
Farley, F. (1986, May). The Big T in personality. *Psychology Today, 20,* 44–52.
Fenichel, O. (1945). *The psychoanalytic theory of neurosis.* New York: Norton.
Fowles, D. C. (1994). A motivational theory of psychopathology. In W. D. Spaulding (Ed.), *Integrative views of motivation, cognition, and emotion* (pp. 181–238). Lincoln: University of Nebraska Press.
Gazzaniga, M. S. (1989, September 1). Organization of the human brain. *Science, 245,* 947–952.
Gough, H. G. (1987). *The California Psychological Inventory administrator's guide.* Palo Alto, CA: Consulting Psychologists Press.
Gray, J. A. (1987). *The psychology of fear and stress* (2nd ed.). Cambridge, England: Cambridge University Press.
Kagan, J. (1966). Reflection–impulsivity: The generality and dynamics of conceptual tempo. *Journal of Abnormal Psychology, 71,* 17–24.
Kagan, J. (1976). Emergent themes in human development. *American Scientist, 64,* 186–196.
Kagan, J., Snidman, N., & Arcus, D. (1993). On the temperamental categories of inhibited and uninhibited children. In K. Rubin & J. Asendorpf (Eds.), *Social withdrawal, inhibition, and shyness in childhood* (pp. 19–28). Hillsdale, NJ: Erlbaum.
Keating, D. P. (1978). A search for social intelligence. *Journal of Educational Psychology, 70,* 218–223.
Kochanska, G., Murray, K., & Coy, K. C. (1997). Inhibitory control as a contributor to conscience in childhood: From toddler to early school age. *Child Development, 68,* 263–277.
Kopp, C. B. (1982). Antecedents of self-regulation: A developmental perspective. *Developmental Psychology, 18,* 199–214.
Kosslyn, S. M., & Koenig, O. (1992). *Wet mind: The new cognitive neuroscience.* New York: Free Press.
Kuhl, J., & Kraska, K. (1989). Self-regulation and metamotivation: Computational mechanisms, development, and assessment. In R. Kanfer, P. L. Ackerman, & R. Cudeck (Eds.), *Abilities, motivation, and methodology: The Minnesota Symposium on Learning and Individual Differences* (pp. 343–374). Hillsdale, NJ: Erlbaum.
Lewin, K. (1935). *Dynamic theory of personality.* New York: McGraw-Hill.
Lewin, K. (1946). Behavior and development as a function of the total situation. In L. Carmichael (Ed.), *Manual of child psychology* (pp. 780–832). New York: Wiley.
Logan, G. D., & Cowan, W. B. (1984). On the ability to inhibit thought and action: A theory of an act of control. *Psychological Review, 91,* 295–327.
Metcalfe, J., & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification: Dynamics of willpower. *Psychological Review, 106,* 3–19.
Mischel, W. (1968). *Personality and assessment.* New York: Wiley.
Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. *Psychological Review, 80,* 252–283.
Mischel, W., Shoda, Y., & Peake, P. K. (1988). The nature of adolescent competencies predicted by preschool delay of gratification. *Journal of Personality and Social Psychology, 54,* 687–696.
Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989, May 26). Delay of gratification in children. *Science, 244,* 933–938.
Murray, H. A. (1938). *Explorations in personality.* New York: Oxford University Press.
Patterson, C. M., & Newman, J. P. (1993). Reflectivity and learning from aversive events: Toward a psychological mechanism for the syndromes of disinhibition. *Psychological Review, 100,* 716–736.
Polivy, J. (1998). The effects of behavioral inhibition: Integrating internal cues, cognition, behavior, and affect. *Psychological Inquiry, 9,* 181–204.
Posner, M. I., & Rothbart, M. K. (1992). Attentional mechanisms and conscious experience. In A. D. Milner & M. D. Rugg (Eds.), *The neuropsychology of consciousness* (pp. 91–111). London: Academic Press.
Pulkkinen, L. (1988). A two-dimensional model as a framework for interindividual differences in social behavior. In D. H. Saklofske & S. B. G. Eysenck (Eds.), *Individual differences in children and adolescents* (pp. 27–37). New Brunswick, NJ: Transaction.

Rachlin, H., & Raineri, A. (1992). Irrationality, impulsiveness, and selfishness as discount reversal effect. In G. Loewenstein & J. Elster (Eds.), *Choice over time* (pp. 93–118). New York: Russell Sage Foundation.

Revelle, W. (1987). Personality and motivation: Sources of inefficiency in cognitive performance. *Journal of Research in Personality, 21,* 436–452.

Roger, D., & Najarian, B. (1989). The construction and validation of a new scale for measuring emotion control. *Personality and Individual Differences, 10,* 845–853.

Rogers, C. R. (1951). *Client-centered therapy: Its current practice, implications, and theory.* Boston: Houghton Mifflin.

Rothbart, M. K. (1989). Temperament and development. In G. A. Kohnstamm, J. E. Bates, & M. K. Rothbart (Eds.), *Temperament in childhood* (pp. 187–247). New York: Wiley.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality, 9,* 185–211.

Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a new criterion Q-sort scale. *Developmental Psychology, 33,* 906–916.

Simon, J. L. (1999). *Resampling: The new statistics* (2nd ed.). Arlington, VA: Resampling Stats.

Sternberg, R. J. (1985). *Beyond IQ: A triarchic theory of human intelligence.* New York: Cambridge University Press.

Taylor, E. (1998). Clinical foundations of hyperactivity research. *Behavioral Brain Research, 94,* 11–24.

Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety, with an emphasis on self-report. In A. H. Tuma & J. D. Maser (Eds.), *Anxiety and the anxiety disorders* (pp. 681–706). Hillsdale, NJ: Erlbaum.

Watson, D., & Clark, L. A. (1993). Behavioral disinhibition versus constraint: A dispositional perspective. In D. M. Wegner & J. W. Pennebaker (Eds.), *Handbook of mental control* (pp. 506–527). Englewood Cliffs, NJ: Prentice Hall.

Weinberger, D. A., & Schwartz, G. A. (1990). Distress and restraint as superordinate dimensions of self-reported adjustment: A typological perspective. *Journal of Personality, 58,* 381–417.

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review, 66,* 297–333.

Zuckerman, M., Kuhlman, D. M., Joireman, J., Teta, P., & Kraft, M. (1994). A comparison of three structural models for personality: The Big Three, the Big Five, and the Alternative Five. *Journal of Personality and Social Psychology, 65,* 757–768.