

SOCIAL STRUCTURE AND BEHAVIOR: AN INTRODUCTION

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## Social Structure and Behavior: An Introduction

Over the past several years there have been increasing efforts by a small group of developmental psychologists and sociologists to conduct a series of dialogues that would attempt to find conceptually more satisfying ways of bridging the reciprocal relationship between changes in social macro- and micro-structures and the process of psychological development in relationship to issues of human aging (e.g. Schooler & Schaie, in press). The purpose of this conference is to examine whether these efforts can be expedited by examining in some detail the various ways in which societal structures and the psychological aging processes intermesh. My introductory remarks have three objectives: First, I would like to orient our discussants and the audience to some of the salient issues that I would like them to keep in mind particularly as they listen to the presentations. Second, I would like to present a brief exemplar from my own work to show how the interface of social structures and behavior becomes apparent in the work of at least one psychologist. And third I would like at the very outset of our discussions make some advance comments on the nature of new research paradigms that I believe will be needed to advance our efforts to test specific propositions that will elucidate the reciprocal relationship between societal and individual development.

### Primary Issues and Goals of the Conference

The series of conferences of which is the first will address different aspects of the relation between social structures and adult development. The particular objective of this conference is to focus specifically on the kinds of structural variables that demographers and social psychologists believe to be important indicators of the societal dimensions that must constrain individual behavior. The past two decades have seen the development of a substantial body of knowledge regarding the psychological processes involved in human aging. Before this information can be applied with confidence for the purposes of primary prevention or public policy decisions there are a number of issues that require resolution. Much of the behavioral work has been conducted in studies that used samples of convenience; thus calling into question the external validity (generalizability) of the findings. Laboratory and field studies, moreover, have shown that these processes are highly individuated and that the occurrence and magnitude of behavioral age decrements may be affected by many environmental circumstances and population characteristics. In addition, there is evidence to suggest that changes in social structure occurring over time also impacts behavioral consequences for the aging individual.

There is need now to develop systematic approaches that would permit the application of knowledge on those aspects of social structure that are likely to affect individual behavior to the

design and interpretation of empirical investigations in the behavioral sciences. Such an effort would require the interaction of behavioral and social scientists for the purpose of forging interfaces between their often divergent conceptual approaches in order to permit tests of explicit and generalizable propositions regarding the impact of social structures upon the human aging process. In addition to raising the level of awareness of behavioral and social scientists to these issues, a concrete outcome would be seen in the development of models for more policy-relevant behavioral science research on human aging.

Our primary goal in the next two days is to take as serious stab at conceptualizing the manner in which social structures impact upon adult psychological development. Of particular interest will be the development of paradigms that operationalize structural dimensions in a manner that would permit differential outcome predictions for individual psychological development. To do we would like to encourage participants to examine the particular macro- and micro-structures to be discussed at this conference with respect to their differential impact upon particular psychological processes in adulthood.

In order to contribute towards a break from the traditional static view of the role of environmental influences taken by many researchers, conceptualizations will be encouraged that emphasize the manner in which changes in social structure might impact upon psychological processes. Requisite data bases with respect to the

dependent variables available over sufficiently long time spans are currently available only for fairly limited psychological domains. That is why we commissioned some detailed analyses with respect to a few sample case (intellectual abilities, personality, and interpersonal behavior), but have also encouraged speculative essays that might encourage work in other domains where existant data bases are still quite limited.

At the level of micro-structures, we would like to emphasize the examination of detailed analyses of the work place, the home, the school setting, the institutional environment, or of other particular environmental situations that are thought to impact psychological outcomes differentially by age or cohort membership. This effort will begin today with a review of existing situational taxonomies that have addressed or could address age- or cohort-related developmental issues. Such taxonomies will then be related to behavioral outcomes and attempts will be made to identify the nature of the dimensions that underlie the categories that best predict individual behavior.

#### An Exemplar of the Interface of Structure and Behavior

The example I wish to consider comes from my work on adult intellectual development that speaks to the possible impact of the cohort flow in certain demographic characteristics upon age-related changes in cognitive performance. Later on in this conference, Sherry Willis will examine the sample case of adult

cognitive development in more detail. Here I will just paint a very broad picture to set the scene for our further discussions.

Recent years have seen extensive discussions by life-span oriented developmental psychologists devoted to the importance of context in the study of behavioral development (e.g. Bronfenbrenner, 1979; Baltes et al., 1979; Schaie, 1978; 1982a, 1986b; Willis, 1985). The initial thrust of such discussions was directed primarily to the question of the generalizability from laboratory studies to field situations, or from the information gleaned from non-representative convenience samples to broader populations and policy issues. More recently, however, the focus of concern, however, has shifted to the more fundamental question whether contextual parameters, usually defined as social structures, might have direct causal impact on the direction and rate of behavioral development (cf. Gribbin, Schaie, & Parham, 1980; Stone, 1980). A related issue is the question whether changes in the population parameters for selected developmental processes may in turn have direct consequences for changes in social structure. There is a paucity of empirical studies by psychologists that have explicitly included social context as part of their experimental design. Perhaps the most noteworthy substantive area, however, in which at least a beginning has been made, is the study of age changes and age differences in adult cognitive development (cf. Schaie & Willis, 1984).

The major structural context that has been investigated by

developmental psychologists is the effect of birth cohort membership upon cognitive performance with advancing age (cf. Schaie, 1984a, 1986a; Schaie & Hertzog, 1986). In addition, differential structural attributes of successive birth cohorts with respect to the distribution of educational characteristics, income, occupational and health status, have been related to individual performance differences and to developmental trajectories for the ability domain. Some attention has in the past been given to the impact of health status as expressed also by specific disease entities (Hertzog, Schaie, & Gribbin, 1978), and to the long-term effects of cognitive styles and family status (Gribbin, Schaie, & Parham, 1980; Schaie, 1984b).

My example comes from the Seattle Longitudinal Study (SLS), a multi-wave panel study that uses as its population frame the membership of a metropolitan health maintenance organization (cf. Schaie, 1983). In this study random samples of community-dwelling adults over the age range from the twenties to the eighties were sampled 7 years apart in 1956, 1963, 1970, 1977 and 1984. Study participants were assessed with measures of Thurstone's first five primary mental abilities (Schaie, 1985; Thurstone & Thurstone, 1941), and limited demographic information was also obtained. In our example we restrict our discussion to four primary abilities: Verbal Meaning, the ability to comprehend words, a measure of recognition vocabulary; Spatial Orientation, the ability to mentally rotate objects in two-dimensional space; Inductive

Reasoning, the ability to infer rules from examples that contain regular progressions of information; and Number, the ability to manipulate number concepts, as measured by checking simple addition problems.

What I wish to call to your attention to are some broad features of the cohort progressions shown by our studies of these cognitive abilities. The design for our analyses of cohort differences represents an independent random sampling model, where each cohort at each age measured is assessed by means of a separate sample, thus controlling for possible effects of testing, reactivity and experimental mortality (Schaie, 1965, 1973, 1977). Cohort difference estimates were obtained by taking the differences between observed means for each pair of cohorts at all common age levels, and then averaging across all estimates to avoid undue weighting in terms of differential sample sizes. Cohort gradients were next constructed by cumulating cohort difference estimates across the cohorts available for analysis.

Differences between successive cohorts as expressed in  $T$  score points ( $1/10 \text{ SD}$ ) were cumulated from the oldest cohort born in 1889 up to the most recently measured cohort born in 1959 for the four abilities of Verbal Meaning, Spatial Orientation, Inductive Reasoning and Number and are presented in Figure 1.

What I would like you to focus on are the differences in slope and shape of the cohort gradients for different abilities. Inductive Reasoning comes closest to showing a linear positive cohort



progression. Even here there are diversions from linearity, with relatively steep increments up to the 1931 cohort and far slower and decelerating increment thereafter. The next most substantial pattern of positive increment across successive cohorts is shown by Verbal Meaning. After an initial modest dip this ability rises until the 1924 birth cohort, followed by another modest dip. This is followed by a further rise to an asymptote attained by the 1945 and 1952 cohorts, once again followed by another modest dip. Spatial Orientation also shows a basically positive cohort progression, but with a much flatter and variable profile. This ability reaches an initial asymptote for the cohorts from 1910 to 1931. A further rise to a new peak occurs in 1938, which is followed by a drop to the earlier asymptote in 1952, but with recovery to the higher level by the most recent cohort. A very different pattern is shown for Number. Here a peak above base is reached by the 1910 cohort at a level that is maintained through the 1924 cohort. Thereafter an almost linear negative slope is found that continues through the most recently observed cohort.

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Insert Figure 1 about here  
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These data obviously suggest that previous discussions of the impact of cohort differences upon intellectual performance in adults have been too simplistic. It is no longer possible to hold that benign changes in health status, life styles, and education

have a generalized positive effects that will inevitably lead each successive generation to reach an asymptote that is greater than that achieved by its predecessor. Instead, we note that cohort progressions occur at quite different rates for different abilities as well as displaying patterns that are non-continuous. For some variables positive cohort trends reverse, even to the point, that over a wide range of cohorts, the most recent cohorts may perform at a level that could be lower than that shown at equivalent ages observed for much older cohorts. It seems to follow then that changes in socialization patterns and other environmentally programmed experiences must differentially impact cohort progression as well (cf. Nesselroade, 1983; Schaie, 1984a, 1986a).

The observed differential cohort profiles now raise the question whether contextual variables can be identified that have differential impact on the abilities that we have studied and that also show differential cohort profiles. Figure 2 shows cohort patterns for several of the contextual variables. Those that seem most directly related to the crystallized abilities, education and income, show almost linear positive cohort gradients; albeit less steep for education than for the inflation-confounded income measure. But just as for the ability measures, there are contextual variables that have much more complex profiles. Frequency of occupational change, for example, actually declined slightly until the 1938 cohort, but thereafter showed a steep

rise; this in contrast to our other mobility measure, change in living quarters, which showed a rising cohort trend throughout. Family status variables also show complex cohort patterns. Thus age at first marriage steadily fell until the 1931 cohort, and has since been rising, while age of first child attained an initial peak for the 1910 cohort, then followed the pattern for age at first marriage, but showed a steep drop for the most recent cohorts.

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Insert Figure 2 about here  
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Considering the interrelation of ability and contextual variables, it is my contention that many of the irregularities in the cohort progression for the ability measures might be better understood by examining shifts in contextual variables occurring over the same time periods (see also Gribbin, Schaie, & Parham, 1980). That is, some of the "stairstep" phenomena seen in ability cohort profiles may represent fluctuations in sampling and/or general population characteristics on contextual variables that constrain the distribution of individual differences on mental abilities. The question arises, of course, whether changes in the contextual parameters have been instrumental in leading to the observed shifts in cognitive performance levels, or whether changes in ability parameters have contributed to the shifts in contextual variables.

The data that I have presented here suggest that there are substantial shifts in performance level for some but not all cognitive abilities across successive population cohorts. The magnitudes of such shifts are well within the range of reported age-related decline. We may conclude therefore at least provisionally that part of the disadvantage faced by older individuals when compared with their younger peers must be attributed to the fact that successive cohorts reached higher performance asymptotes. However, this particular disadvantage may be a temporary one, albeit of particular concern with respect to those now in the last third of their work life. That is, cohort progressions for those cognitive variables where they are most pronounced have clearly slowed, and in fact may be reversing for the late baby-boom cohorts. For some abilities a negative cohort gradient has in fact prevailed for several decades. Individuals reaching early old age in the next decade may therefore be at less disadvantage, or perhaps be advantaged with respect to the immediately succeeding cohorts (cf. Schaie, 1982b; Schaie & Willis, 1986a).

#### The Need for New Paradigms

The cohort differences in cognitive performance levels are paralleled, at least in our panels, by similar cohort differences in contextual exogenous and endogenous variables. It must now be asked whether cohort differences in demographic characteristics

drive the observed cohort differences in mental abilities, or whether at least some of the observed demographic changes may actually have arisen as a consequence of genetic or environmentally-determined shifts in ability level in the population (cf. Riegel, 1976). To the extent that such shifts are particularly prevalent at some ages but not others, it might be argued that the cross-cohort shifts in ability may represent a population process a la Featherman (1986). Thus far, our attempts at causal modeling of the relationship between contextual variables and mental abilities have resulted primarily in the fitting of models that are reciprocal in nature (Stone, 1980). However, there are some exceptions: significant paths have indeed been found for the endogenous variables of cardio-vascular and arthritic disease (Stone, 1980), and the exogenous variable of work complexity (Dutta, Schulenberg, & Lair, 1986).

I would like to speculate, nevertheless, that the substantial shifts in level and rate of cognitive performance in older adults may well result in substantial shifts in demographic indicators and other contextual indicators. For example, later maintenance of cognitive ability will induce more people to seek further education past young adulthood, with resultant age by cohort shifts in educational levels. Increasing numbers of middle-aged and older people via utilization of psychotherapy and other growth experiences are likely to enhance their level of flexibility. More able and flexible older people might seek out greater work

complexity (ff. Schooler, 1984), and be eligible for economically more rewarding pursuits, leading to shifts in the age by cohort occupational as well as occupational change distributions (Kohn & Schooler, 1983). Even the demonstration that much of the apparent intellectual adulthood may be experiential (cf. Schaie & Willis, 1986b) will lead to increased efforts on the part of community-dwelling elderly to seek out remedial and self-help programs. Nor should we disregard the effect upon public policy and resulting changes in environmental contexts that result from the efforts of scientists who demystify prevalent stereotypes about the aging process.

Our lack of success in explicating the specific contextual variables that may be implicated in cohort differences and age changes in mental ability or other psychological variables must be attributed to the fact that we have yet to formulate sufficiently specific hypothesis that can be tested in carefully described subsets of the broader population. In addition, we have yet to understand fully the impact of the lagged occurrence of demographic shifts, their consequences for psychological development, and possibly resultant shifts in the demographic characteristics that have affected the behavioral processes in the first place.

Traditional analyses of psychological processes as outcome variables tend to emphasize the identification and quantification of the relation between structural independent variables and the

occurrence of individual behavior at a single point in time. By contrast, we would like to concentrate upon issues related to the differential prediction of outcomes of behavioral processes occurring from young adulthood into old age. Particular attention should, of course, be given also to linking theoretically well-grounded models of psychological variables that have either developmental implications or lend themselves more readily to build interfaces with the well-researched attributes of social structure.

As we listen to the detailed presentations and discussions at this conference it is my hope that we will pay close attention to the design requirements that would allow addressing the questions I have posed. Indeed it is my hope that our work at this conference will be instrumental in spawning the kind of inter-disciplinary efforts that will provide the new research paradigms that will move us forward to the more explicit study of the fascinating but frustratingly complex interface between social context and individual development.