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THE EVOLUTION OF CULTURAL HERITAGE AS PRESERVATION AND MUTATION: INTEGRATING GENETIC (VERTICAL) & EPIDEMIOLOGIC (HORIZONTAL) MODELS

by

HANS RAINER KÜSELL, PH.D.

A dissertation submitted to the Graduate Faculty in Biology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

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This manuscript has been read and accepted for the Graduate Faculty in Biology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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Abstract

THE EVOLUTION OF CULTURAL HERITAGE AS PRESERVATION AND MUTATION: INTEGRATING GENETIC (VERTICAL) & EPIDEMIOLOGIC (HORIZONTAL) MODELS

by

Hans Rainer Küsell, Ph.D.

Adviser: Professor Robert F. Rockwell, Ph.D.

Graduating high school pupils (N = 1158), and a subset of parents, were interviewed and tested in 35 locations in the U.S. and Europe, on a theory predicting (a) a conflict between "vertical" ("parwrit": parent, writing,) and "horizontal" ("peertel": peer, televideo) cultural transmission, and (b) a cross-generational population trend from the "vertical" toward the "horizontal."

Evidence presented by historians and developmentalists on a fundamental shift in the human "ecological niche" and childhood rearing practices during very recent generations was interpreted in terms of an "integrated model." This was based on an extension by analogy of Wright's island and isolation-by-distance formulation, prior studies applying DNA and epidemiological analogues to cultural transmission, especially by Cavalli-Sforza and Feldman, and the related concepts of extended phenotype and meme-flow of Dawkins.

"Vertical" parental presence in the childhood home, high calibre of schooling and related learning of languages, reading in general and of fairy tales, and time at home, correlated, as predicted, positively with one another, and negatively with a cluster of variables including "horizontal" peer "sleepovers," number of siblings, and high usage of telephone and TV. Parwrit

childhood indices were also found to correlate positively, and peertel variables negatively, with adulthood variables putatively measuring erudition, maturity, idealism, and a preference for individual and one-on-one over group activities. A "sensitive period" for parental presence was found for certain years of early childhood, as was the predicted differentiating effect of the presence of both parents. The *ratio* of parental to sibling presence in childhood was found determinative, as predicted (as opposed to the Zajonc and Schacter hypotheses).

In line with the theory, "verticals" were found to resemble their parents more, and "horizontals" to exhibit higher deviations from norms, with such pattern largely transmitted from generation to generation. Unforeseen was the finding that the calibre of school attended, is the single strongest predictor of the level of adult maturity and erudition, closely followed by a related index of "number of languages learned."

The findings are held to explain why the cultural distance *between* generations eclipses, for the first time, *intra*-generational differences, in an apparent increasing erosion of diversity.

Widmung

(Dedication)

Dieses Dissertationsstudium ist meinem lieben Sohn gewidmet

(This dissertation study is dedicated to my dear son)

Bernhard Friedrich Werner Kuesell

(23 VII 1969 – 14 II 2001)

ACKNOWLEDGEMENTS

I want to thank the members of my dissertation committee, and especially its chairman, Professor R. F. Rockwell, for their support and encouragement during the almost seven years in which this study and dissertation evolved. Meriting special mention, the importance of Professor Durham's salient contributions was exceeded only by the decency and generosity he displayed in assuming the ordeal of shuttling between Stanford and New York.

The more than two dozen research assistants, who aided in the testing and interviews of the subjects, both in Europe and in the U.S., many of them without requiring any monetary remuneration, also deserve special commendation. My lifelong friend, Dr. Günter Reuel, in Germany, and Reverend Dölf Rindlisbacher of Bern and Dr. Roland Huber of Zurich, were of great help in opening the necessary doors for me in Germany, Switzerland, and Austria. In the United States my ability to interview in a number of schools was facilitated through the help of Dr. Frank Perotti, through whom I was introduced both to an Ojibwe Indian Reservation and the U.S. Department of Education Blue Ribbon Schools Program in Washington, D.C.

It is customary on this page, to also thank the spouse. However, there was none present these years. Thanks, however, are due my mother, Mrs. Elfriede Kuesell and my son, Bernhard Friedrich Werner Kuesell. My mother, though in her late 90s, with her support, wit, excellent (short and long-term) memory, and often incisive comments, belied her age completely, and has made her presence during these years most memorable. My son's amazing sense of humor, warm heart, and astute queries and observations repeatedly proved an inestimable background contribution. This was unfortunately truncated by his untimely death.

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CHAPTER 1

INTRODUCTION

> ... the strong emotional value which human beings attribute to handed-down custom, derives most of its motivational energy from a very similar relationship between the young generation and the elder. If the recipient does not feel, for at least one member of the older generation, that emotion of respect and love ... the mechanism of passing on traditional norms and rites seems unable to function ...It is necessary to keep in mind that even a partial loss of cultural tradition is very dangerous, and also that it can occur all too easily.
>
> K. Z. Lorenz (1966), in J. Huxley (Ed.), A discussion of ritualization of behavior in animals and men. *Philos. Transact. of the Royal Society of London. 251: (172-Series B).* 281-2.

Overview

This is an empirical study through the narrow window of two generations into a central dimension of what Dawkins (1982) has termed the *extended phenotype*, in this case of the human being.

Most of the models and mathematical or quasi-mathematical notations applied in this dissertation are derived from biology, chiefly from evolutionary genetics and ethology. However, though anchored in biology, the subject matter stands at one of the frontiers of biology, and this is presented as an interdisciplinary study, also overlapping realms which are traditionally more the subject matter of anthropology, sociology, psychology, and history.

The central dimension of the extended human phenotype, which is of concern here, is that of current and recent changes in parenting practices, childhood enculturation from other than parental and traditional sources, and shifts in the individual development and cultural institutions of at least a significant portion of successive recent generations in much of the world.

It has even been proposed (Gottlieb, 1992) that an earlier suggestion that "*Homo erectus* could have possibly evolved into *Homo sapiens* through a dramatic change in rearing practices"

could point to a more general role of such phenomena in evolution. This implies that a fundamental shift in parenting or rearing practicies might even effect speciation. There is a fundamental question to be asked, in the case of a highly altricial species, like *Homo sapiens sapiens*, on the possible *unforeseen side- or after-effects* of very rapid, vast, auto-generated ecological change: from a traditional, largely rural horse-and-buggy world to that of postmodernity, characterized by Gargantuan advances in communication and transportation. Some sociologically-minded historians like Bertman (1998) in his *Hyperculture: The human cost of speed* and Toffler (1970) in his *Future shock*, a quarter of a century before him, have posed it. Anthropologists like Margaret Mead (1964, 1961) saw it long ago precisely as involving a conflict caused by the effects of modernity making for a waning of parenting and a rising power of peers (see p. 21, below). Modern-day anthropologists have pointed to the related growing evidence and danger of increasing loss of cultural diversity (Durham, 1991). The question is an interdisciplinary one, and should *also* be asked by biologists.

The heritage of human culture is transmitted, as extended phenotype (Dawkins, 1982), from generation to generation in a "meme-flow,"[1] which in many respects resembles the parallel and intertwined DNA transmission (Cavalli-Sforza, 1979; Cavalli-Sforza & Feldman, 1983, 1981; Richerson & Boyd, 1992. 1987). Of course, there is cultural transmission from adults other than parents, which Cavalli-Sforza and his colleagues have called "oblique." Then there is transmission from siblings and other peers, termed "horizontal." The latter has been likened (Cavalli-Sforza, et al., 1982), citing an argument dating back to Galton (1889), more to the

[1] The term "meme," was introduced by Dawkins in 1976, and revised by him a decade later and related to the more overarching concept of his "extended phenotype" (1982). It represents a "gene-analogue," and specifically, the smallest unit of culture that may be transmitted between humans. Comparing it to other proposed terms ("cultural trait," "culturgen," "symbol," "theme," "concept," culture-type," etc.), Durham opts for *meme*, as "the reasonable name for the functional unit of cultural transmission" (1991, p. 189).

diffusional spread of a mutation, an epidemic or an invention through a society. On the other hand, siblings or peers may, occasionally, act not as agents of change, but as reinforcers of traditions, or transmitters of parental values (Chen, Cavalli-Sforza, & Feldman, 1982). Similarly, it may be surmised, parents may, in lieu of transmitting traditional culture, become models of the current replacement of, or rebellion against, traditional rites, symbols, and institutions. We may see the latter in the phenomenon of the parent who displays a preference to be the child's buddy and equal, rather than educator and guide. By and large, it is held that "cultural transmission is vertical" and may be seen as quintessentially depending "on parental phenotypes and/or genotypes ... which are subject to natural selection" (Feldman & Zhivotosky, 1992, p. 11935).

During the first 99.8% or so, of the more or less 120,000 years in which the subspecies *Homo sapiens sapiens* has existed (Cavalli-Sforza, et al. 1994), there obtained an approximately stable equilibrium in a hierarchy between vertical, oblique, and horizontal cultural transmission. Shifts in the role and power of agents were by and large very gradual, over evolutionary time. Yet, beginning about two to three centuries, or six to nine generations ago, this equilibrium began shifting in a pronounced manner; first but a bit more quickly, and most recently, in a such a rapid and manifold manner, that one might well term it an upheaval or a "punctuation."

The interdisciplinary question upon which biologists should *also* focus, is what such punctuation of the cultural ecology and the related extended phenotype implies. Haeckelian doctrine has not been *de rigueur* in biology for some time, although, as Gottlieb (1992) points out in an historical review, there is a return in recent decades not to the Haeckelian position itself, but to an appreciation of a continuing relationship between individual development or ontogeny and evolution of the species. Yet, if the dramatic recent changes constitute a punctuation or *rupture*, then in terms of the relationship between phylogeny and ontogeny, this may involve a fundamental and potentially detrimental impact upon the evolutionarily long-preserved

interaction between the preservation of traditional civilization and the individual parent-child relationship. Or it may involve this only for much or some of the species. It might be seen as either following a speciation or extinction model, or both, and might signify a kind of cultural equivalent to subspeciation – or extinction.

The "Little house on the prairie" is fast becoming a distant ancestor, totally estranged from our current milieu, although it figured in the family history of many of us but a few generations ago. If, as some evidence appears to indicate, the future shall be increasingly divorced and unanchored from such ancestry, the question can also be stated in this manner: Can anything resembling what was for so long called "human civilization" survive, in the face of the disappearance of the fundamental social relationships and rules of conduct, which had been evolutionarily preserved for at least much of the past 120,000 years? The scope of this empirical study is limited to a few key areas of the Western World. The study may thus be termed Western-centric. Yet problems and questions very similar no doubt obtain in much of the "non-Western" cultures, there often intertwined with conflicts caused by varying degrees of acceptance of, or resistance to, westernization.

This dissertation attempts to go beyond the formulations of the past three decades of Cavalli-Sforza, Feldman, Boyd, Richerson, Lumsden, Wilson, Findlay, and others who drew our attention to the various mechanisms of cultural transmission. Most of those investigators have hewed to two fictions: (1) That on an overall basis G (genes) + E (Environment) = 1, and (2) that cultural heritage can be primarily explained in terms of an information-processing model comprised of three vectors described as V (vertical) + O (oblique) + H (horizontal) which also = 1. The equations or formulae aver that, analogous to DNA (allelic) transmission from parents to offspring, the components always add up to unity. Occasionally it is admitted that this is only a convenient fiction, as when Wright (1968) pointed out that there is also an additional

developmental component. Additionally, those proposing this model have shied from an inevitable implication of it. For, to the extent to which their shorthand *is* correct, it is implicitly a *conflict* model. Or at least it is that, when the traditional hierarchic equilibrium between V, O, and H is significantly upset. If one hews strictly to the model, if one of the components should be decreased, the others must tend to fill the void. If in the space of a few generations one component should suddenly vastly increase (or decrease) in strength, this should have a concurrent shrinking (enlarging) effect on the others.

Furthermore, what of the child largely abandoned from the moment of birth, as in the traditional society of Alor (see below)? Here, clearly, $V + O + H << 1$. What of "book-knowledge"? What of the teaching power of the non-human environment, called the *Umwelt* by German existentialist philosophers (in distinction to the human beings on this globe, the *Mitwelt*, and one's own immediate world, the *Eigenwelt*)? And where would one put television, videos, and internet (increasingly replacing the written and to some extent even the spoken word, and replacing as well, not only family life, but also the lifelong contacts most people enjoyed but a few generations ago, with one's village neighbors, the local priest, minister, or rabbi, the family physician, or the other "regulars" at the local pub or club)? Surely, these are also vehicles, and ever more important ones, of cultural transmission to youth (and adults), though often not of cultural *heritage*.

All this apart from the more salient criticism which should be advanced: Not mere transmission of information, but only transmission coupled directly or indirectly to some bonding or emotional connectedness, will ensure that information is indeed accepted and internalized. That is, that enculturation will take place. A child, at least traditionally, has not looked upon a rank stranger casually passing, and to a parent, as equally compelling model figures.

This dissertation will focus on (a) what appears to represent a growing conflict, break, or punctuation in the hierarchical equilibrium which once obtained among the channels of cultural transmission and (b) on a possibly related reduction in sophistication and diversity of culture.

In focusing upon the sequence of individual developments as a function of parent-to-child rearing practices, and these, in turn, as constituting a chain of links in cultural evolution, the study leans strongly on models of "the ecology of human development," advanced over the past decades by such as Bronfenbrenner (1979, 1961) and John Berry (1979). Such approach necessarily focuses upon dimensions which constitute, at the same time, both a premise, as well as a wider background to, "cultural heritage," circumscribing the flow of genes and memes. Thus, after expanding briefly upon the basic concepts and foci of the present study, it is to these dimensions that we shall turn.

Cultural Heritage, Parenting, Individual Development

Clearly, the organism is (after the cell) a first major level of phenotypic expression of the genotype. Similarly, moving outwards, the spider's web, the bird's nest, the bee's hive, and the buildings and tools created by *Homo sapiens* may be viewed, as Dawkins (1982) does, as examples of "extended phenotypes."

Genetic selection is, as Wright (1982) stresses repeatedly, beyond the "genic," at the phenotypic and further levels of the biological "hierarchy." This means that that phenotype (including the organism, the socio-cultural unit, and that civilization/culture of the species) which *preserves itself, will thereby preserve the genotype of its constituent units* (individuals and genes). Selection is thus of phenotypic *constellations* of characters which, by some criteria of inclusive fitness (or if one prefers Dawkins' formulation, of some ultimate phenotypic extension of potentials transmitted by the genes), further the preservation of the "vehicles" (organisms) within

which the genes travel, and those further hierarchic levels (socio-cultural units from family, to deme, larger subpopulation, subspecies, etc.) which organisms have, in turn, created as their further (outer) vehicles or extended phenotypes.

Thus, when one speaks of culture, one notes that the extended phenotype has various layers which are further, outward reaching, surrounding the organismic, and constitute extensions of the vehicle. Now, cultural heritage, the views of some behavioral geneticists notwithstanding, is *not only* a genetic (DNA) expression. More specifically, especially for an organism as highly altricial as the human being, a generation transmits not only genes to its offspring, but also a *behavioral repertoire.* Were there no such transfer of knowledge and competence from generation to generation, we could not have left the caves, and arrived wherever it is we now are in relation to where we were once at. "Once," that is, before we learned how to fashion the first tools, and pass hunting, gathering, fishing, warring, building, and other skills to our children.

We came to pass family and tribal lore, sagas, myths, ballads, fairy tales, and eventually literature, music, arts, crafts, toolmaking, skills, monuments, and so forth on, from generation to generation. What we transmitted from parents to offspring expressed a slowly emerging network of belief systems, mores, and customs. This network of traditions was held together by an underlying hierarchy of values and it was outwardly expressed in such domains as institutions (like the family, matrimony, guild, state, church, school, or fraternity), rites (like baptism, adoption, achieving one's majority, the marriage ceremony, initiation, graduation, burial), symbols (like the wedding ring, the fraternity pin, the religious icon, or wearing black as a sign of mourning), and etiquette (like being dressed in public, addressing children differently than adults, shaking or folding hands in greeting, and offering one's seat to an elderly or handicapped person).

One may regard the underlying values and outward expressions involved in such traditions as constituting much of a culture or civilization. Clearly, there are more central and

important and more peripheral and less important parts to such traditions. Thus one notes the gradual changes over the millennia in some aspects of institutions and rites, perhaps more frequent shifts over the centuries in the ceremonies and symbols attendant to such rites, and even more frequent variation in etiquette, as the more "peripheral" of the latter blends into what are merely temporary fashions of the day. In this dissertation the primary focus is upon the more central and abiding of the values and expressions of such traditions or "culture." *"The core of culture," as here viewed, thus refers to such rites, institutions, mores, employment of symbols, etc. as have survived for at the very least several generations. More transitory customs (fashions, fads, etc.), may be considered to be cultural "drift."* "Drift" may contribute to the *evolution of cultural heritage*, or its effects may disappear again within a generation or two.

There have been two main approaches to the study of cultural transmission (apart from that of the behavioral geneticists, for whom culture is little more than another expression of DNA). In one approach cultural transmission or evolution is seen to parallel and follow the basic mathematical design of genetic DNA evolution. In the other approach, the principle and laws of evolution are quite universal, with DNA/genetic and cultural transmissions being simply two, out of many, domains governed by evolution (Durham, 1991). In implying the appropriateness of the second approach, Durham also proposes to tackle a major "devolutionary" twist he notes in human cultural evolution, stating (1991, p. 2):

> The last few hundred years have successfully reversed the general trend of prior millennia toward increasing human diversity. Worse still, the process appears to be self-reinforcing. The remaining variation seems subject to ever greater depreciation and intolerance. In my opinion, it is important not only to enhance our understanding of the causes of diversity before the very variance to be explained has more seriously diminished, but also to restore a sense of respect and tolerance for human differences before they are lost forever.

This study follows the lead of Cavalli-Sforza, Feldman, and others who have applied the mathematical model of evolutionary genetics to human cultural transmission, that is, have

followed the first of these two approaches. However, no inherent conflict is seen with the more general approach, which is probably ultimately more valid (although not permitting the ready-made scaffolding of evolutionary genetics) or with such approaches as that of Lumsden and Wilson (1981) in which genetic and cultural transmission are held to be two parallel systems continuously modifying one another.

Going beyond the formulations of investigators like Cavalli-Sforza, Feldman, etc., with a slightly different focus, it is herein proposed that three domains are interrelated in a nontrivial manner: cultural heritage, parenting, and individual development (within, of course, an even wider-ranging environmental/ecological setting). The primary focus of this study is not upon the population, nor the individual organism, nor the gene, but upon a particular level of the extended phenotype. Namely, the cultural rites and institutions of *Homo sapiens*, and more specifically those forces which tend to further and maintain such institutions, and thus their diversity, and those which might induce their erosion or diminution.

This implies also that human genes, individuals, and societies are "selected for," in a very Darwinian sense, as a function of the relative "fitness" of their cultural institutions. This is always in relation to the ecological and environmental setting, *including such aspects of ecological change and of tradition (e.g., rearing practices) as have been autogenerated by human beings themselves* (often not consciously, but as unforeseen aftereffects of social, industrial, and other changes that have affected, and in part constituted, the changing extended phenotype of *Homo sapiens sapiens.*) Such ecological change and changing extended phenotype affects both the organism and the culture. We must recall that evolution, both in the narrower (DNA) and wider (universal) sense, consists overwhelmingly of preservation or conservation/replication, with only very occasional change caused by selection and adaptation (on mutations, drift, and environmental change). In this the universal law of evolution applies: Changes are always much

more likely to be deleterious (or irrelevent, should Crow and Kimura be right), than beneficial (being selected for, or constituting adaptation).

Veneration or respect for cultural institutions can only exist if there are human beings who are inclined to "venerate." Such veneration, in turn, must be revitalized, or, to use Dawkins' term, *replicated* in each generation. This replication is here proposed to be a function of individual development and the latter, in turn, to be a function of vertical cultural transmission. The transmission is normally accomplished through parenting. Parenting, itself a function of cultural institutions, is thus here regarded as a predictor or independent variable, with development, including in each generation a rekindled veneration for culture, as an intermediate link. The circular nature of the network of influences must be stressed. Thus, changes in a society's parenting styles do not occur in a cultural vacuum. They are influenced by long-term shifts in socio-cultural belief systems, and changes in the power, ideology, and interests of various agents of enculturation (parents, clergy, tribal elders, teachers, peers, television, government, business, etc.). However, making headway is impossible, if one keeps stressing continuously that everything feeds back or depends upon everything else. One needs must put one sliver of reality under the microscope at a time.

Relatedly, the emergence or decline of evolutionarily stable and fit strategies (Maynard Smith, 1993, 1989; Ridley, 1996) ensuring cultural replication, may be said to be furthered by phenogenotypic vertical cultural transmission, and typically reduced by the lack of such transmission, or by horizontal or environmental forces reducing the vertical transmission.

In brief, this empirical study will attempt to cast light merely upon certain aspects of the above paradigm. For instance, what is the relationship between the transgenerational preservation of cultural heritage and certain demographic antecedents, particularly those defining the presence or absence and the nature of *parenting* as well as exposure to the *written word*, in the early and

later development of the child. Relatedly, to what extent does the foregoing constitute an influence upon the *level* of sophistication, maturity and values, in the young adult, a few years later? In this, an extensive battery (more fully described below), soliciting pertinent demographic and other information, and testing for attitudes and cognitive competencies, was administered to 1158 graduating high school students, at 35 locations (36 site visits) in the United States, Germany, Switzerland, and Austria. In addition, information was also obtained from 412 parents of such students. (Very fragmentary information on only two questions was also obtained from 48 individuals belonging to the "grandparental cohort," that is, individuals over 70 years of age. Related anecdotal information was further obtained in semi-structured interviews with over 60 principals and teachers.)

The argument is developed in the nexus of work in genetics, ethology, developmental theory, diffusion theory/epidemiology, anthropology, psychiatry and psychology – all also tied together with an historical perspective. Let us examine, in what admittedly amounts to a curtailed and fragmentary fashion, some evidence from each of these areas, and do so seriatim.

Genetics

Over a period of over seven decades, Sewall Wright made multiple incisive contributions to genetic theory. Early in his career, he even extended this to a modest path flow diagram for cultural transmission (Wright, 1931a). However, three conceptual frameworks of his are singled out here, as being particularly germane to the thesis of the present study: (1) The shifting balance theory – with the associated concepts of selection involving population density versus sparseness, niches, peaks, and saddles (Wright, 1968, 1949, 1939), (2) the island and isolation by distance models, with the associated concepts of the evolutionary need for virtual isolation of relatively

small subpopulations and of the danger of a very large, concentrated, single-niche, and panmictic population (for which moving to a higher selective peak would be impossible)(Wright, 1978), and (3) the very specific concept that living organisms are organized in a cascade of hierarchies, where "evolution depends on a certain balance" and that "the course of evolution through the general field is not controlled by the direction of mutation, and not directly by selection, except as conditions change, but by a trial and error mechanism [involving] largely nonadaptive differentiation ... and ... intergroup selection" (1932, pp. 170-71).

Of these areas, an extension by analogy of the "island"/"isolation-by-distance" model has been singled out to provide the primary foundation of this thesis. Critical here is Wright's observation that the formulation of the rate of optimal *mutation* is largely equivalent to the rate of very limited *immigration* across virtually isolated islands. Wright concludes that

> The only practible method of bringing about a ... non-self-terminating advance seems to be through subdivision of the population into isolated and hence differentiating small groups, among which selection may be practiced ... The crossing of the superior types followed by another period of isolation, then by further crossing and so on *ad infinitum* presents a system [of] ... evolutionary advance.
>
> Wright, S. (1931). Evolution in Mendelian populations, in S. Wright & W. B. Provine (1986), *Evolution: Selected papers*, p. 153.

In extending the conceptual schemata of Sewall Wright to cultural transmission, it is suggested that we regard certain formulations of Dawkins, and of Cavalli-Sforza and Feldman, as presenting for purposes of this study, subsets of the theoretical framework of Wright.

Dawkins (1989/1976), as discussed above, proposed the "meme," as the fundamental unit of cultural transmission, analogous to the gene of DNA transmission,[2] and an "extended

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[2] Whereas I adopt Dawkins' *meme* nomenclature (on which see footnote 1, p. 2, above), one should be aware of the implications and controversy of Dawkins' construct where the gene, and by analogy the meme, are not only defined as the true units of life, but also as the "replicators" of the genetic or cultural heritage (1989, p. 192, pp. 272 ff.). Dawkins correctly sees the

phenotype," which extends also to the institutions, rites, and artifacts of human culture (Dawkins, 1989, 1982).

In line with common practice, parent-to-child cultural transmission is typically termed "vertical," transmission from peers is called "horizontal," and transmission from adults other than parents is designated as "oblique" (Cavalli-Sforza & Feldman, 1981). Thus, transmission of memes to a child-being-encultured, is normally held to be a sum these three components. Boyd and Richerson (1985, 1983; and Richerson & Boyd, 1992) have noted the various routes cultural transmission can take, and have stressed the effect of social conformism, but also the importance of "decision-making forces in the cultural system," placing them, on this issue, more into the "emergentist" camp. Similarly, Jablonka, Lamb, and Evital (1998) have stressed "Lamarckian mechanisms" (though ascribing their origin to a Darwinian framework of selection), stressing that

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replicating mechanism to be at the heart of the preservation of the germ line, which, in turn, is at the foundation of all conservation and evolution. However, *in cultural transmission*, the replicator, one might argue, is not *only* the gene-analogue ("meme") itself, but rather also a particular parent-child bonding constellation.

What is being "selected for" here may be the individual "selfish" memes (in Dawkins' sense), but these are not coterminous with the quite phenotypic replicative mechanisms created *by* the parent-child bond. Here, therefore, the *replicative mechanism* takes place on multiple levels! The *objects of replication*, on the other hand, are those human institutions which may also be defined in terms of Dawkins' "extended phenotype" – in the *most* extended sense (Dawkins, 1982). I guess that Dawkins would argue that the parent-child bonding and transmission mechanism may be seen to be but another "vehicle," with only the gene as replicator. Yet since Dawkins does admit that in the case of memes there is probably non-Mendelian blending [on which issue I am not at all convinced he is correct] , a Lamarckian kind of phenotypic modification of the gene-analogues, and a lot of reversal of the fundamental dogma, etc., it becomes a hairsplitting exercise whether to call the parental transmission of culture as being more aptly described as a vehicular or a replicative process. At a *molecular* level it is always only the genes which replicate. Yet at the level of the extended phenotype of which culture is a vital part, the *architectural* blueprints or recipes for *culture* transmitted are surely constitutive of a replicative process. (As those dissipating or replacing such replication are surely constitutive of the cultural analogue for mutation.) Also note the competitive preference for the term "interactor" for Dawkins' "vehicle" (Durham, 1991; Hull, 1988; and within a broader view of evolution as involving many mechanisms other than selection, Wright & Provine, 1986; Eldredge & Salthe, 1985).

"behavioral" and "instructive" inheritance systems (and language) may now reconstruct or rechannel genetic possibilities.

Kirkpatrick and Lande (1989) have restricted their focus upon phenotypic evolution under maternal inheritance (for a similar point of view, see Avital & Jablonka, 1994). They were able to demonstrate that cultural transmission can either retard or accelerate evolution in comparison with purely genetic DNA transmission. Findlay (1992b, 1991), incidental to his investigation of Fisher's (1930) fundamental theorem, was able to confirm and extend the latter finding and to demonstrate that biocultural fitness can, under the impact of strong cultural transmission, either increase or decline over evolutionary time. However, while Findlay (1992,a,b, 1990) also extends his findings to oblique and horizontal transmission, he admits that his analyses are largely limited to vertical transmission, suggesting (Findlay, 1992a, p. 88) that "particularly in highly social organisms (like humans) ...the effects of biocultural transmission involving [important oblique and horizontal modes] of cultural inheritance remain to be investigated."

In general, the most rigorously worked out model of cultural transmission is that of the Cavalli-Sforza/Feldman group (Cavalli-Sforza & Feldman, 1981, 1982; Cavalli-Sforza, et al., 1982; but also see Aoki & Feldman, 1994, 1987; Bergman, et al., 1995; Feldman & Cavalli-Sforza, 1989. 1984, 1979; Findlay's work, cited above; and Rushton, et al., 1986), who have analyzed cultural inheritance and its effects *phenogenotypically*, in a very analogous manner to that of DNA genetics, and in terms of cultural co-evolution[3] (Feldman & Zhivotovsky, 1992; Kumm, Laland, & Feldman, 1994; Lumsden, 1988; Lumsden & Wilson, 1981).

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[3] The problem with the term "cultural co-evolution," is that it is used in quite different senses by various groups of investigators. Spinney (1997) compounds the problem by juxtaposing a "cultural co-evolution" group favoring "group selection" and the belief that "creatures can control their own destiny" (D.S. Wilson, R. Boyd, P. Richerson, K. Laland, and allegedly also J. Kumm,

The extension of the concepts of evolutionary genetic DNA transmission to the level of cultural transmission seems in retrospect logical and inevitable. Since the days of T. H. Huxley it has been argued repeatedly, that the process of evolution (in the Darwinian sense of continuing long term preservation with very occasional adaptive selection for mutation or change), spans ubiquitously through all that is biological – and possibly even more (Huxley, 1898; Bendall, 1983). The phenotype (including the "extended phenotype") is by definition biological, and there is no evidence that would uniquely exempt human institutions (including, in the wider sense of that term, customs, rites, mores, and belief systems or the metaphors people live by) from such evolutionary process.

Asuming two ways in which organisms can bequeath their characteristics to their offspring, DNA transmission and a parallel cultural imprinting mechanism, the issue of the *interaction* of the two mechanisms arises. It is often argued that evolution of cultural transmission works much faster than genetic transmission, and frequently also averred that the former can speed the latter up tremendously. Lumsden and Wilson (1981) espouse this view. Cavalli-Sforza and Feldman (1978, 1984) and Feldman et al. (1985) have analyzed various models involving kin selection and gene-culture co-evolution. They cite (1985, p. 5814) Maynard Smith and Warren as questioning the Lumsden and Wilson conclusions. Salthe (1985) comments on this, noting that in cultural evolution, "mutations" also involve "cultural selection," where the cultural environment "directs" mutations (p. 262).[4]

Critical for the thesis developed below, is the importance of relative barriers between subpopulations, both for gene and meme flow, as well as for mutation and diffusion theory.

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and M. Feldman) with the "reductionists" exemplified by Dawkins. I am not sure that Feldman, for instance, would like to see himself labeled in this manner.

[4] Thus, Cavalli-Sforza and Feldman, Boyd and Richersen, and Durham (1991, p.12) in this connection speak of "the natural selection of cultural variation."

For cultural transmission, I should like to propose, we may consider the smallest agglomaration, or cohesive socio-cultural unit of vertical cultural transmission to be a "deme-analogue." This is in its simplest form coterminous with an "extended-family-plus-small-number-of-befriended-neighbors" unit, and analogous to the construct of the (smallest cohesive and distinct subpopulation of freely interbreeding individuals, or) "deme." Thus, whereas demes are generally defined as the smallest population subgroups of interbreeding or DNA-exchanging/ merging individuals (see Maynard Smith, 1993, 1989), deme-analogues would be defined as the smallest cohesive and distinct (i.e., relatively isolated) population subgroups of high cultural interaction.[5] To the extent to which such deme-analogues exist in relative isolation and immunity to outside influences, to that extent may we assume vertical transmission (conservation) to be favored over horizontal transmission (with the latter analogous to mutation, or drift). The analogy to S. Wright's "island" model is obvious.

If the biological necessity for a mechanism of cultural transmission to preserve the human's *heritage* above and beyond the DNA level, was early foreseen by such as Wright (1931a, b), then the analogue for *mutation* (or the upsetting of heritage), in *innovation, epidemiological,* or diffusion theory, was foreseen by an even earlier giant in the application of mathematical theory to biology. It is to this to which we now turn.

Diffusion Theory: The Epidemiological Model

As cited in Cavalli-Sforza, et al. (1982), already in 1889 Galton had proposed that biological mutations (in domesticated plants and animals) could be explained as spreading in a manner similar to that of technological innovations through society. This represents a horizontal diffusion process, as found in diffusion theory, Brownian motion, and in general that class of

constructs which deals with the spread of rumors, diseases, epidemics, and so forth, and at one of its asymptotes specifies the conditions for entropy or chaos.

Cavalli-Sforza, et al. (1982), who see "mutation" (and largely equivalent "immigration") as a paradigm for horizontal (peer) transmission to build upon, to be best explicated by mathematical epidemiology, as the most worked out theoretical framework available within the general area of diffusion theory. It suffers from one cardinal defect, however, because epidemics, pandemics, etc. are specified in mathematical epidemiologic formulations, as commencing with a slow growth curve, which then speeds up, reaches a certain zenith or asymptote, and finally retreats again or reaches and settles at an approximate equilibrium stage. This resembles, approximately, the shape of about three-quarters of an "S," lying on its side. However, in the spread of inventions, belief systems, or new customs, the old is often overwhelmed and does not even subsist in remnant form. The possibility that a bacterium or virus may, say, destroy a species entirely, in other words the possibility of extinction (total victory for the invador), is not dealt with in epidemiological models (Bailey, 1973) with which I am familiar.

However, this possibility of "total victory of the new" and concurrent "extinction of the old," *is* the normal model in general diffusion or "diffusion of innovation" theory. Unfortunately, as far as I can tell, the researchers involved in such have never developed a rigorous mathematical modeling approach (as geneticists and epidemiologists have), and have not advanced much in a half-century of discourse, beyond their original "S-shaped diffusion curve" (Rogers, 1962, 1983; Rogers & Shoemaker, 1971). Indeed, they themselves admit, that "after over 3000 diffusion publications on our hands" ... "we do not need 'more of the same,'" namely, an abiding "pro-innovation bias," resulting in "[us knowing] much more (1) about the diffusion of rapidly diffusing innovations than about the diffusion of slowly diffusing innovations, (2) about adoption

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[5] As more fully explained above, the deme or deme-analogue would, following Wright (1931b),

than about rejection, and (3) about continued use than about discontinuance" (Rogers, 1983, p. 93). ("Discontinuance" may be said to have a counterpart in, or be analogous to, "extinction.")

Perhaps, the lopsidedness is in part due to the fact that most innovations (mutations) are horizontally or obliquely introduced. Almost by definition, the innovation (mutation) is more "modern," will upset the existing order, and is the antithesis of replication and conservation. On the other hand, that which is being replaced can normally trace back *its* origin to vertical conservation, and occasionally to prior oblique or horizontal innovation. If a conflict (or synergistic) model be applicable here, it might call for a focus upon the forces which make for replication (conservation) versus those creative of replacement (mutation). Such forces need not necessarily correspond to the *type of agent (vertical, oblique, horizontal)* involved. In part, also, one encounters a mirror-image bias, that is a bias in the opposite direction, in epidemiological research. When the spread of something "negative," say a contagion or delinquency, is investigated, investigators seem automatically to apply the epidemiological model. An example of this is the development by Rowe and Rodgers (1993) of "EMOSA" (Epidemic Modeling of the Onset of Social Activities), applied by them to the spread among teenagers of practices like smoking, drinking, etc. A variant of this model was recently with heuristic success applied to the spread of delinquency among American adolescents (Jones, 1998).

Of interest here are recent studies and a re-examination of old ones (Dishion, McCord & Poulin, 1999; Harvard Mental Health Letter, 2000) suggesting that peer influences, especially through group involvements, *increase* behavior problems and "negative life outcome in adulthood." Simply sending children to summer camps, instead of being a "good thing," appears to increase the risk of their subsequent delinquency, drug abuse, and criminal involvement. Many sacred cows are vulnerable if these research findings should stand. Thus, also, the typical peer-

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consist of a virtually completely isolated group of at the very most two to three dozen individuals.

pressure group, in the 12-step "rehabilitation" center for addicts, possibly has an iatrogenic effect, and thus proves counterproductive for many remanded to such institutions.[6]

In the modern Western world, especially outside of the family home (ignoring, for the moment, "televideo" influences) peers have often much more influence, than parents, teachers, or adult supervisors. As an example, within institutional settings, the power of peer reinforcement was found to be of the order of 9-to-1, when countering the influence of adult staff (Buehler, Patterson, & Furniss, 1966). The school is another setting, where peer influences abound.

The proclivity for children to emulate the behavior of their peers, and turn their backs upon parental role models, varies dramatically from epoch to epoch, or cohort to cohort, and varies at any one time between societies and subcultures within, for instance, Western civilization. Margaret Mead (1940/1961, see footnote in Chapter 2, p. 21 below; also see F. Kluckhohn, 1950) was brilliant enough to behold the various constellations possible, and to recognize these as variants characteristic of cultures (of an epoch) and subcultures. In contrast, many leading modern investigators display a pronounced temporal myopia for everything but the backyard of the very here and now they are a the moment facing; that is they display an ignorance of historical changes, and of alternative cultural profiles across epochs. As an example, Harris (1995), in propounding her theory of universal peer influences, avers that she can only find evidence for cultural transmission through *peers*. More specifically she maintains that about half of what one turns into during development is in the genes and the other half due to peers, with

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[6] This may to a significant extent be borne out by four studies, in print, or submitted for publication, arising out of the recently concluded NESAT (National Evaluation of Substance Abuse Treatment) investigation, conducted by the National Center on Addiction and Substance Abuse at Columbia University ("CASA"), under the supervision of Herbert H. Kleber, director of all Substance Abuse research at Presbyterian Hospital/New York State Psychiatric Institute/Columbia University College of Physicians & Surgeons (personal written communication from Dr. Kleber, and personal communications from Dr. P. Johnson of CASA, to this writer).

parents and the entire adult generation having no influence at all. Of course, this is what one might find, if limited in perspective and in subjects to the *Post-Vietnam mainstream U.S. cohort.* One would likely have encountered something quite different in the mainstream America of the first decades of the 19th century! Bronfenbrenner (1985) has suggested that the critical shifts in this from one epoch to another demand that intervention strategies must dramatically differ from cohort to cohort, and that in sharp contrast to a few generations ago, today's parents should move toward exercising much more control.[7]

One would also, I would predict with certainty, find something quite different in isolated *regions and cultures* (as opposed to *epochs*) of the world of *today*, as in the mountains of Cantons of (inner) Switzerland like Uri and Schwyz or in Tibet, or in a survey of such subcultures of North America, as say, the Mennonite sect of Hutterites, the Old Order Amish, some Christian fundamentalists, or the Orthodox Jews of Brooklyn, New York. Admittedly, the latter are all relics; dinosaurs whose heterogeneity or diversity has survived, primarily through having successfully maintained barriers to, and a relative *isolation* from, mainstream society.

Horizontal diffusion, as in the spread of change of fashions or an epidemic, is successful, and rapidly so, to the extent to which there are no barriers, no isolation by distance or otherwise, to impede its flow and access[8]. One must here parenthetically take note of the dramatic change in the *ecology* of cultural transmission during the past six to nine human generations: Virtual

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[7] Suggesting that the authoritative and authoritarian styles of past epochs may have called for admonitions to greater freedom for children; while the current epoch, on the contrary, with the influence of peers being at an all-time high, seems to require a shift to greater control and authoritativeness and less permissiveness in parenting.

[8] One must note a subtle distinction, which is here being ignored, between the nature of *diffusion proper* and an *epidemiologic* process. In the former, there is a continuous increase in area of diffusion, with a concomitant dilution, or decrease in strength with outward movement (as in the spread of a drop of ink in a large body of water). In the spread of an epidemic (rumor, innovation, etc.), on the other hand, the spread resembles three-quarters of an S-curve, lying on its

"isolation by distance" has in most cases been just about removed, as modern communications and mobility have transposed what was once far away and without much influence, into the immediate proximity of the child. The thesis hereof avers that it should be possible to demonstrate that in the case of peers, television, internet, and so forth, their horizontal power will be paramount, precisely to the extent to which there is an absence of vertical transmission to impede them, that is, of didactic parents, parent-surrogates, and a written legacy of the past.

Anthropology

Joining in the vision of Margaret Mead of our current civilization, as representing a culture in flux, with subcultures, families, and individuals showing varying degrees of loss of cultural diversity, due to the rapidly increasing power of peers and cultural change[9], brings us into

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side, commencing with first very slow, then very rapid advance, then a flattening at the (upper) asymptote.

[9] Thus Mead (1940/1961, pp. 659-661) stated:

> ... it is a recognized feature of our society that children soon after starting school begin to substitute the standards of other children for the standards set by their parents ... [this] would not, however, in a stable or very slowly changing society, have the drastic effects that [it has] under the present conditions of American society; but if the world in which the children live is a different world from that in which their parents grew up, and when the world in which they will be adults will have a still different pattern, the socializing function of the age group becomes very much intensified ... And the majority of young people respond eagerly to the approval and shrink away from the disapproval of their age mates...
>
> The surrogates who carry the cultural standards have changed. They are no longer the parents, omnipotent and belonging to another order of being, but one's everyday companions, with the same strengths and weaknesses as oneself. Their power is transitory; by moving to another town one could escape them altogether, wheras to parents children are bound by inalienable ties ...
>
> [W]e can judge something of the effect in devaluing the self which is developed in individuals who are taught to accept as cultural surrogates individuals who are not highly respected...
>
> Shame, the agony of being found wanting and exposed to the disapproval of others, becomes a more prominent sanction behind conduct than guilt, the fear of not measuring up to the high standard which was represented by the parents ...
>
> Under these circumstances, the standard of the crowd becomes binding upon the individual, and the content of that standard is without significance, for in repudiating the early moral standard he repudiated the unconscous insistence on the intrinsic difference between good and bad.

the arena of anthropology. Mead was only one of a number of noted anthropologists who, mostly active in the middle third of the 20th century, were primarily concerned with the nature and causes of cross-cultural differences, as well as individual and group variations from "dominant and substitute" cultural profiles. Others included Clyde and Florence Kluckhohn, Ruth Benedict, Edward Sapir, and Ralph Linton (Haring, 1956).

All these anthropologists had to varying extents been influenced by the emphasis placed by both psychoanalytic theory and behaviorism upon early upbringing and child rearing practices as pivotal for subsequent personality formation and adjustment. Variations in childhood training practices were repeatedly invoked as causes for putative individual, cultural, and nationality personality differences. If the universal nature of "man" had been much emphasized in the 19th century, the lack of universality occupied the center of the stage through the first two-thirds of the 20th century, with at least a partial return to a focus upon common or universal human biology apparent in recent decades. To some extent, this has paralleled a pendular swing from stressing nature, to nurture, and then back again to nature.

Yet, in another sense, anthropology (and its precursors) had for centuries focused upon differences in the "human station." Differences of age, gender, marital status, education, religion, roles, statuses, ranks, guilds, titles, and so forth caused one to think of human beings as classified and *categorized*, once one had knowledge of such characteristics. Van Gennep (1908/1960), in his seminal *Rites de Passages*, had outlined the "rites of passage," which permit an individual to pass from one chamber of life, across ritualistic, sanctified thresholds, to other chambers, advancing through steps of baptism, achievement of the age of majority, educational graduation, marriage, apprenticeship, master certification, and so forth. It is a view which embodies an emphasis upon categorical and class differences, and which subsequently waned sharply, though

only in the wake of post-Vietnam War egalitarianism and the rise of a kind of cult of unpretentiousness and universal intimacy (initially marching under the banner of "authenticity"), social leveling/homogenization, and political correctness.

The systematic series of attempts to relate adult culture and personality differences to early upbringing, and especially to childhood training practices and enculturation by parents and others, came to be known as the "culture and personality" studies. For instance, in 1937 the anthropologist Cora DuBois set out to spend two years on the small island of Alor in Indonesia. Unlike most of Indonesia which had long ago converted to Islam, or Bali, which was Buddhist, the people of Alor had remained somewhat secluded, and stayed with their "aboriginal" culture.

But what was peculiar to the Alorese, was that parents systematically ignored their children from the moment of birth onward. The fathers (and grandfathers) were involved in a kind of daily and continuing "stock-market-type" discussion (in an illiterate society) in the market place (dealing with who in the village theoretically owed what to whom), while the mothers (and grandmothers) would spend each day in the fields doing all the hard agricultural work. Each morning the children were simply abandoned at the homes. Should their screaming become intolerable, an elder sibling might simply stuff some gruel into the child's mouth, to temporarily stop the crying. We may regard this as a case study of the asymptote of permissiveness. The parents were less than the opposite of authoritative and didactic, they were not even present.

What was interesting in this particular culture-and-personality study was the adult personality profile which was found to obtain among the Alorese. Adults lied, cheated, and stole continuously. Everyone was deceptive; crime was pervasive. Marriages lasted at the most a few years, often only months, and were punctuated by infidelities. Dedication was unknown and no-

one produced any commercial or artistic products of quality. There were no deep or lasting relationships, and children typically despised their parents, with whom they had little traffic.[10]

When DuBois returned to the United States in 1939, the study became quite famous. Prior to leaving for Alor, she had taken a crash course in Rorschach and other testing in New York City with the well-known Freudian psychoanalyist, Abram Kardiner. Now, not only DuBois, but also Kardiner in association with the Columbia University anthropologist Ralph Linton, extensively interpreted and wrote on the Alorese study. There were a few detractors. Porteus (1967) challenged what he saw to have been a cultural bias in her interpretations of the Rorschach. Yet, on the whole, the study has stood the test of time, and is considered one of the seminal culture and personality studies of the 20th century. Kardiner, the psychiatrist-mentor in this, is our point of departure for the next section.

Psychiatry and Psychology

Kardiner was America's leading Freudian psychoanalyst of his day, and brings us to the psychiatric and psychological background to the current study. To Kardiner and his associates the cause and effect sequence was clear: Deprive children of the parental love and nurturance they need so much in the early "critical" years of life, and one will have warped the resultant adult personality. This was, of course, a classical Freudian view, however it coincided with the central message of the behaviorists as to the importance of early environmental influences and habit formation, and the findings of ethologists as to the importance of an early "critical" or "sensitive" period for "imprinting."

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[10] There was only one adult DuBois encountered who did not fit the pattern. A man by the name of Fantan, proved to be quite truthful and reliable. Delving into Fantan's life history, DuBois found that he had had a very atypical childhood. Fantan had had a father, who unlike all the other fathers, left the market place frequently to pay visits to, and attend to, his son at home.

It is a perspective which has also been supported by evidence from hospitals, foundling homes, and adoption and desertion studies during the past decades. The early seminal studies were those of the psychoanalyst R. A. Spitz (1946), whose initial comparison involved children reared in a foundling home/hospital (where they were cared for by nurses), with other children, apparently similar in genetic background, reared in a special home attached to a women's prison, where, however, the mothers were permitted frequent visits and contacts with their children. The walking, speaking, social and other skills of the hospital-setting children
were, after a few years, far below normal, and far below those who had been brought up in a similar institutional setting, but had enjoyed contact with their mothers. Spitz initially called the syndrome of the foundling children "hospitalism," and later "anaclitic depression."

Decades of similar findings all over the world followed. Bowlby (1969) concluded that attachment between a mother and child is absolutely essential to the survival of the human species. Ainsworth and her group of associates (Ainsworth & Wittig, 1969) developed methods for assessing individual differences in attachment. Attachment theory is still being refined today, as in caregiver attachment in twin studies (Finkel, et al., 1998). Studies have also confirmed the need for parental presence to ensure not only adult emotional health, but also *discrimination.*

Thus, the child needs to learn to distinguish appropriate from inappropriate model figures, to assure gender identification and to discriminate between social intimacy and distance. Allport (1997) reviews findings that children without frequent parental presence and guidance, especially those in group-child-care settings, will often be *indiscriminately* friendly, failing to distinguish between family members and strangers. They exhibit thus a certain lack of focus upon, and of differentiation (distinction) between, varying social roles, statuses, and distances.

The biological constructs of virtual isolation (separateness) versus unlimited diffusion (homogenization) have their counterparts in the developmental psychological constructs of

differentiation (also called "field dependence/independence, the former characteristic of global, diffuse, undifferentiated, and syncretic, the latter of differentiated and analytic thinking), initially developed in the "comparative psychology of mental development," by Werner (1957), and then further developed by Witkin and his co-workers (1962) into a systematic methodology for the study of individual differences.

In sharp contrast to this history of findings and theory has been a deliberate deemphasis of individual differences by a number of developmental, behavior genetic, and sociobiologically oriented *psychologists*. Thus, the developmentalist, Sandra Scarr, was much taken to task by some of her colleagues on the stance taken by her in her presidential address to the Society for Research in Child Development in 1991 (Scarr, 1992). She had basically maintained that there is not much of a difference in the upbringing of most children in the Developed World, and that almost all grow up to be quite adequately adjusted, "within the normal species range." Scarr also suggested that except for extreme cases of abuse and neglect, there is a kind of biological resiliency permitting most children to go through various types of day care, or lack of parental care, without registering any long-lasting negative effects.

One of Scarr's most vociferous critics has been Diana Baumrind (1993), who avers that Scarr's theory is basically flawed because it assumes that almost all children have "ready access" "to an environmental cafeteria replete with adequate and wholesome nourishment." Baumrind argues that whether Scarr's theory is even applicable to "privileged children is also a matter of dispute." She cites multiple longitudinal and other studies over the decades which, Scarr's view to the contrary notwithstanding, *do* repeatedly show that parents influence their children's development. Baumrind specifically returns to the early schema of classification of parenting styles into "authoritative," "authoritarian," and "permissive." She then cites a series of clear findings by multiple investigators that children with "authoritative" parents (responsive and warm

and firm disciplinarians) tend to be well-adjusted and competent, whereas those with parents "virtually abdicating their parental role," tend to develop into problematic adolescents lacking many competencies. Gottlieb, et al. (1982) comment on the larger dimensions on which these developmental and rearing issues touch. Allport (1997, p. 208) concludes an up-to-date survey with her assessment:

> In just 2000 years or so[11] human mothers have gone from spending 24 hours a day to two to three hours ...[in direct contact with their children]
> We think we're getting away with this because our children live through it. And maybe we are. ... Then again, it may be that we are just passing the cost of child care on to society as a whole, in the form of deeply troubled children who grow up into disaffected young adults.

This conclusion turns out to be an *understatement.* There are recent reports as to the United States by the Population Council (Bruce, et al., 1995) which pronounce our youngest children to be in a "crisis" situation. The United Nations (1981), reports a sharp drop of maternal direct child care over the prior three decades – down from an average of 5.7 hours *per week* to a mere two hours. The time mothers spend in direct child care is about twice as much in most continental European countries, with the U.K about halfway between the continent and the U.S.,

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[11] Allport's point is well taken, but she displays a gross lack of knowledge of history. The time span in which this shift has occurred is not one of about 2,000 years, but rather of only two centuries! The universal public school in the Developed or Western (or "First") World is less than two centuries old. Before that, most learning took place through private tutors, and was thus largely restricted to the small upper class, while less than two percent of children attended (cloister and similar) schools. Further, the public school was for a long time only a four-year, and then a six-year elementary school. Not unrelatedly, only some 100 to 250 years ago (at the time of the spread of the textile mills in Great Britain, at the time of the Civil War in the U.S., and in the closing decades of the 19th century in much of Continental Europe), did women in large numbers commence to work outside of their homes (and farms). Women in the "First" World were, therefore, primarily "homemakers," and thus at home with their children, until some three to eight generations ago. In less developed countries, the shift has only been occurring in the twentieth century. Finally, even after fathers, and a few centuries later mothers also, had commenced to work farther from the home site, it was still and until the end of the 19th century, an almost universal custom for *all* members of the family to be home for dinner (middle of the day) and supper (evening meal).

but also sharply down from a few decades ago (also see, Bundesministerium, 1995). Everywhere in the West, fathers spend approximately half as many hours in direct child contact as mothers.

There is, however, an alternative interpretation as to the detriment caused by a significant reduction of parental guidance. The increasing lack of parenting may not lead to the effects predicted by orthodox neo-Freudian or even behavioral theory; this may have a Kohutian[12] interpretation instead. In lieu of creating "unhappy" children in "emotional turmoil," the upshot may just be a lack of maturation, or of growing up. In other words, instead of creating depressed and emotionally unstable adults, this may just lead to developmental arrest, and to "biological" adults who "psychologically" remain infantile. This is analogous to a kind of heterochrony, akin to neoteny, quite familiar in the annals of biological evolution (Ridley, 1996).[13] A series of studies by social psychologists in Germany have found ever more pervasively, youth-centered individuals who indicate a clear avoidance of becoming adults (Watts, et al., 1989). Goleman (1988) reported signs of the same trend in the United States of the 1980s. The same phenomenon can be presented in a very positive light, by relabeling it "emerging adulthood," and viewing it as permitting "young people a prolonged period of independent role exploration" (Arnett, 2000).

In discussing social deprivation of the young, it is customary to cite the Harlow (1962) Wisconsin studies on rhesus macaques (*Macaca mulata*). The Harlows showed that these

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[12] Neo-Freudians of the second half of the 20th century were in the U.S. divided into two main camps. The "orthodox" neo-Freudians, led by Otto Kernberg (chief psychiatrist and medical director of Cornell-Westchester to this date), holding to the overriding importance of underlying repression, conflict, guilt, and smoldering aggression, and the main opposition group, led (until his death two decades ago) by Heinz Kohut (whose followers became known as "Kohutians"), who maintained that the problems of the neurotic and of many personality disorders are simply the effect of "arrested development," never having grown up or developed the ability for mature relationships with others, with maintenance of inordinate (narcissistic) fixation upon the self.

[13] Classically, any of the four types of heterochrony refer only to a developmental disparity between somatic features and reproductive organs/activities. By analogy only, one may posit that a similar disparity (as in neotony and paedomorphosis) exists in those *Homo sapiens*, who display a psychological arrest, but whose somatic and sexual development is "normal."

monkeys, when deprived of early social contact, developed severe personality dysfunction. However, these studies may be of circumscribed value. There was in much of the work insufficient control for parental versus peer (or oblique) social contact in the early socializing environment (or lack of it). Thus, it is not often clear whether the mother's absence, or the peers' absence, or social deprivation in general, was the pivotal element of early "deprivation." Secondly, there is some question as to the claims of the Harlows that most of the highly maladjusted monkeys were subsequently "cured" through peer therapy. Dr. Isabelle Faucher (personal communication), a primatologist, informs me that she personally examined some of these allegedly peer-cured monkeys, finding them (many years later) to be very disturbed and maladjusted, and far from "cured." Thirdly, as Hinde (1971), a close colleague of the Harlows, points out in an exhaustive review of the development of social behavior in nonhuman primates, many aspects of social behavior, and especially "the role of the male" differ considerably from species to species. Whereas in the rhesus macaque, infants come to avoid adult males, in "some other macaques" there is considerable interaction between adult males and infants, and in species like "the marmosets and tamarins ... the infant is carried more by the male than by the female" (Hinde, 1971, p. 50). Spitz's findings may thus be more salient and pertinent to the present study.

Ethology and Developmental Theory

Parental modeling and the parent-child bond appear as recurrent vehicles of transmission of parental behavior patterns to the offspring generation "up and down" much of the phylogenetic scale. This point of departure is cogently expressed in the Huxley-Lorenz symposium cited at the beginning of this chapter. In the case of human beings, the applicability of comparative findings and ethology is based upon Charles Darwin's perspective, that "man" and animals are all part of

one continuum.[14] Especially altricial organisms, like the human being, are typically endowed with much of their parents' behavioral repertoire, through what is in a wider sense termed social learning, and in a somewhat narrower sense, cultural transmission. However, although dealing with interdisciplinary dimensions, involving some which were the subject of E. O. Wilson's ambitious integrative effort, this is *not* offered as yet another study to elucidate some aspects of "sociobiology." Of course, the transmission of culture, from one organism to another, when not genetic, involves *one* topic of sociobiology (and classical ethology), that of *social learning* .

Social learning by modeling, observation and imitation has been shown to be the basis of many learned human behaviors (Bandura, 1962). Some investigators have focused upon a wide range of human behaviors which are probably transmitted by some social learning or cultural transmission mechanism and have stressed a kind of neo-Lamarckian phenotypic, holistic, and social constructivism (Gould, 1997, 1983; Plotkin, 1988). Others have hewed closer to a neo-Darwinian line and have attempted to define the model in analogy to DNA genetics. These include Cavalli-Sforza, Feldman, and their associates, whose work will be described below.

In many cases, animals, as rats, for instance (Galef, 1990), learn what and where to eat from others, or what to avoid and be afraid of. Rhesus monkeys, learn to fear the snakes avoided by other (usually elder, more experienced) monkeys (Mineka & Cook, 1988). In some instances learning spreads rapidly in a population, regardless of the age or status of the teachers or pupils. Thus the technique of breaking into milk bottles, once discovered by a bird, spread rapidly in England and from there to the continent around 1921 (Fisher & Hinde, 1949). In certain learning situations the elder learn from the younger. This is reported to have happened in the proverbial story of Imo, the young Japanese snow monkey, who allegedly discovered that washing sweet

[14] In *The Descent of Man* (1871, p. 99) Darwin wrote: "My object in this chapter is to shew that there is no fundamental difference between man and the higher animals in their mental faculties."

potatoes in the sea both cleaned and salted them. Imo's mother then copied this behavior, and from there it spread (Kawai, 1965). More typically, however, the transmission tends to pass from parents to their offspring. Thus songbirds typically learn their songs *only* from their fathers, ignoring in such learning the singing of other adult or peer birds (Lorenz, 1966). The need for learning discriminative and differentiating practices from appropriate "role models" extends very widely indeed down the phylogenetic scale. For instance, early developmental isolation of *Drosophila paulistorum* tends to reduce "discriminatory abilities," causing much homosexual behavior in adulthood (Kim & Ehrman, 1998).

Many ethologists, particularly Lorenz and Tinbergen, have stressed the importance of imprinting, modeling and other learning taking place during an early post-natal *critical period.* Evidence as to some plasticity in this has in recent decades shifted the view to one of a *sensitive* (somewhat adjustable), rather than critical and fixed, period of basic learning.

However, by focusing primarily upon the transmission of human culture, in the sense of customs, mores, rites, symbols, and institutions, the interest herein centers upon an area more circumscribed than that of social learning generally. As the transmission of such culture generally involves passing the prior generation's preferences to the offspring generation, we may, see the prototypes for two alternative and occasionally conflictive channels of learning to be touched upon in the array of examples cited above. A mechanism which makes for conservation and *replication* of the prior generation's behavior patterns, as in the learning of the father's song by the young finch, apears an analogue of Darwinian genetic transmission. On the other hand, a mechanism which causes the spread of innovations through a population, usually entailing the *replacement* of prior custom, appears analogous to the spread of epidemics (as noted by Galton, 1889 and Cavalli-Sforza & Feldman, 1981). One type of transmission is conservative and characterizes heritage; the other preempts heritage and resembles *mutation.*

The general point of view as to the importance of vertical childhood enculturation which is shared by the above investigators is not subscribed to universally. Thus, as mentioned in the previous section, Judith Rich Harris (*The nurture assumption: Why children turn out the way they do,* 1999) proclaims that parents and by inference the entire prior generation, have no role to play in the socialization of the offspring, about 50% of what a child becomes being due to (DNA) genetic heredity and just about all of the remaining 50% resulting from emulation of peers. This is going one step further than Sandra Scarr's extreme position. The developmental psychologist Scarr, as discussed above, has been maintaining that "evolution" had endowed human children universally with enough robustness and resiliency, so that almost any upbringing would suffice to generate the development of healthy and mature adults. Moreover, Scarr has maintained, there isn't much difference between environments and socialization practices, since "for the most part humans grow up under functionally equivalent rearing conditions, that provide opportunities for species-normal development," and to the extent to which there are individual differences, these are mostly *created* by the children themselves.

In fact, whereas the developmentalist Scarr had been saying that children are not raised or reared, but that they create themselves to the extent to which they are not of a universal mold, so Harris now averred that to the extent to which they are not of a genetically determined mold, children are only copiers of peers. Both are saying that variation in parenting plays just about no role. Most simplistically put, the present dissertation study advances the opposite thesis, by proposing that "lack of parenting $\equiv\Rightarrow$ developmental arrest."

More precisely, the thesis advanced herein is that *the role of parenting-in-a-family-setting, especially for a highly altricial organism like Homo sapiens sapiens, might constitute (a) an essential scaffolding for individual development, and (b) a bridge, adjunctive to genetic*

transmission, procreation, reproduction, and organic ontogeny, between individual development and the continuance of culture. The latter, because probably only a human adult developed to maturity can act as an efficient transmitter or replicator of the heritage of sophisticated human culture. I propose, that this concept is, on the one hand, informed of work in ethology and social learning theory from Lorenz to Bandura as cited above, and on the other, finds relevance in the schema of parallel cultural inheritance proposed by geneticists like Cavalli-Sforza and Feldman as well as in the metaphor of the extended phenotype of Dawkins. The last, because the network of memes in such phenotype extends to the enculturation process of human institutions, with the family and parenting being central in the structure of human cultural institutions and rites.

Gottlieb (1992) proposed, in what he termed "neophenogenesis," the possibility that changes in tradition or behavior (in the absence of ecological or environmental change) could ultimately even result in morphological and genetic (DNA) changes. One need not go as far as Gottlieb, in acknowledging that fundamental changes in rearing patterns of children are likely to have both individual (ontogenic) and population (phenogenotypic and cultural) effects.

Recent longitudinal studies seem to indicate that there are important personality continuities from childhood to adulthood, and that "undercontrolled 3-year olds," for instance, grow "up to be impulsive, unreliable, and antisocial," displaying "more conflict with members of their social networks and in their work." "Inhibited 3-year olds" on the other hand, at age 21, "were more likely to be unassertive and depressed and had fewer sources of social support" (Caspi, 2000). Similar data on continuity from childhood development to adult characteristics abound over the decades (Bronfenbrenner, 1985, 1979, Finkel, et al., 1998, Jones, 1998, Plassman, et al., 1995). Both genetics and upbringing no doubt influence such continuities.

A consideration of genetics is where we began this survey of areas of influence, so that we have come full circle.

CHAPTER 2

THE STUDY: THEORY, DESIGN, AND HYPOTHESES

> Tradition is recognized as an important component of animal as well as human behavior ..., so what would be required under this more radical evolutionary scenario would be a change in some behavioral tradition, especially one affecting the rearing experience of young animals in the process of growing up, so that the subsequent behavior of the developing animals would be altered without necessarily causing them to leave their usual physical environment or niche. So far all the behaviorally mediated evolutionary scenarios have assumed an ecological change. The more radical notion of a strictly behaviorally mediated morphological change leading to speciation without an ecological or environmental shift has not been put forward before ...
>
> Gottlieb (1992), *Individual development and evolution.* 195-6.

General Outline

The thesis here posited is that strong nurturance within a traditional family setting,[15] in which both parents are the primary model figures, and in which their modeling includes a modicum of respect for traditions and written communication,[16] might constitute a *virtually necessary*, though *not sufficient*, condition for the development of (a) *emotional maturity* and

[15] What is meant by a traditional family setting? A family, usually headed by a father, with a mother as the primary homemaker and caretaker, with clear distinction between (a) the roles of the female role model, the mother vs. the male role model, the father, and of males and females generally, (b) the roles of adults and children, (c) the varying relationship with members of the nuclear family as opposed to those of the extended network of relatives, (d) the status of members of the family versus outsiders, and so forth. It is a setting marked by *differentiation or distinction* and *hierarchy*, rather than homogeneity and equality.

[16] Written, that is 'on paper,' and not the "tele" modes (telephone, television, internet, E-mail, etc.)

(b) *discriminating cognitive skill* in the developing child, as well as (c) conservation of the *society's cultural heritage* (i.e., institutions, traditions, and competencies[17]). As a corollary, to the extent such nurturance should be absent or impaired, the model predicts *arrested emotional development and lack of differentiation competence in the offspring, as well as erosion of the society's heritage.* (This may become a downward spiral, as erosion of institutions imply a weakening of the traditional family, and this the further erosion of vertical cultural transmission.)

The thesis of this dissertation thus posits that the increasing absence of parents during the past two centuries, from the child's early learning (modeling) and bonding constellation, might be analogous and tantamount to a horizontally or epidemiologically induced equivalent of a *mutation* which may preempt the evolutionary conservation of cultural heritage. This is a "radical" shift, or truncation in "behavioral tradition," involving the "rearing" of offspring, as set forth by Gottlieb in the citation at the beginning of this chapter. However, one does not have to go along with Gottlieb's argument to the final sentence of that quotation. That is, one need not invoke "a strictly behaviorally mediated morphological change." It seems more parsimonious to note that fundamental shifts in *institutions and behavior* have occurred during the past six to nine generations, as the *largely unforseen aftereffects and byproducts* of modernization (industrialization, transportation, communication). This may amount to a truncation (punctuation) in ecology and extended phenotype, in tandem with a diminution of *parenting*!

It must be reiterated, that whereas parents are the usual, normal "vertical" transmitters of past culture, this is not a logical necessity. Farfetched as it might appear, the agents or vehicles for conservation may be, and indeed occasionally are, peers, and in the case of permissive

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[17] "Competencies" would include accomplishments ranging from architecture, to arts, music, crafts, science, the construction of tools, implements (artifacts), machinery, literature, humanities, agricultural expertise, the creation of complex institutions (schools, hospitals, etc.) as well as skills and expertise connected with any of these.

parents, especially those donning a "buddy-rather-than-parent" role, the parents may be the transmitters of horizontal "mutation." Oblique figures might best be *"partitioned,"* each seen as potentially made up of two components or vectors: one vertical, the other horizontal; that is, one conservative and the other mutative. However, oblique figures are not a primary object of inquiry in this study (except in so far as one might be able to determine whether, in fact, they can effectively *substitute,* in cases in which such, rather than parents, live with the children).

This is, therefore, proposed as a study, at the phenotypic level, of the effect of changes in the terms of the basic model (above) and integrated model (below), of the parental inductive or raising influence, required to effect the development and maturation of children. Such memetic punctuation might by analogy be likened to a genetic mutation as fundamental as the loss of a chromosome, or perhaps more to the point, of the loss of the DNA replicating mechanism.

The thesis hereof attempts to integrate the following models and conceptual frameworks:

(1) A barrier or distance concept, based upon S. Wright's work on "island models" and "isolation by distance," and analogues of the related concepts of demes and virtual isolation required for diversity. Such barriers protect vertical transmission from horizontal intrusion (mutation or immigration), and thus protect the continuance of different subcultures (diversity) and evolution. As Salthe (1985) points out, Wright, with this hierarchic schema, shifting balance theory, and related concepts (the importance of "islands," isolation by distance, roles of ecological niches, etc.) vastly extended neo-Darwinian evolutionary theory.

(2) The extension of the Modern Synthesis, to the inclusion of a developmental dynamic, as originally espoused by S. Wright (1968), extended to the inclusion of "behavioral neophenotypes" by the developmentalist Kuo (1976), and further extended by Gottlieb (1992) to a hierarchical and interactive model in which evolution can be

driven by changes in the traditions of a species, reflected in *basic changes in rearing practices*, individual development, and consequent behavioral differences.

(3) Bowlby's "ethological model" on the cardinal role of parent-child bonding processes (especially for highly altricial organisms) in the transmission of cultural heritage. This defines the differentiating "glue," as it were, of the individual links of intergenerational cultural transmission, and thus of the dynamics involved in any possible "basic changes in rearing practives."

(4) The traditional DNA gene-flow analogue model of vertical cultural transmission of Cavalli-Sforza and Feldman (on which also see Boyd & Richersen, 1985, 1983; Durham, 1991; Richersen & Boyd, 1992, 1987), which may here be seen as a subset of the general meme-flow model of Dawkins.

(5) The epidemiological version of the diffusion model[18], applicable (a) to the flow of horizontal ("mutational") peer and "tele/video" "cultural" transmission and (b) to the concurrent erosion of the (until recent a few generations ago) evolutionarily preserved insularity of families and social subgroups.

(6) An association of the above concepts and schemata, into an overall *hierarchic* and *conflict systems model*, with the addition and incorporation of "critical mass" inflection (or punctuation) points. In this the overarching principles are derived from Wright's schemata, with the "extended phenotype" and "meme-flow" concepts of

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[18] Strictly speaking, as mentioned above, the epidemiological model differs from the diffusion model. In simple diffusion, the diffusion is a straight linear process, with an effect which is often continuously declining per outward area of diffusion (as a quantity of ink immersed in a bathtub, which diffuses in all directions). The epidemiological model, described more fully below, consists of an S-shape function obliquely lying on its side, characterized by a slow start, then a rapid rise, followed by a leveling off at an upper asymptote. This is exhibited in the spread of an epidemic, a rumor, or an invention – and as well in the *horizontal* transmission of culture.

Dawkins cast in the role of subsets of Wright's theory (and the DNA and epidemiological analogue models, in turn, as subsets of the Dawkins formulations).

Whereas most of these models and frameworks are biological or developmental in their derivation and nomenclature, this study relates them to (a) recent historical changes, and especially the anthropological and social aspects of such, which are impacting upon the "ecology" of modern human culture, and (b) the current debate on parenting and individual maturation within developmental biology and psychology (Allport, 1997; Baumrind, 1993; Gottlieb, 1992; Harris, 1998, 1995; Scarr, 1993, 1992) .

Prior to any further development of the argument, some terms and some suggested markers of the predictor (independent) and criterion (dependent) variables in this model are in need of definition. The definitions should be seen connected, as diagrammed in the simple flowchart shown below, in Table 2-1, ("Basic Model"). The final "integrated" model is then depicted further below, in Figure 2-1, p. 57.

Table 2-1

BASIC MODEL

Institutions (rites, institutions, & symbols) as exhibited in the *i* parental generation as adults	**Vertical cultural transmission from *i* generation parents to their *i* + 1 generation offspring (presumes parent-child bonding)** ⇒	**Developing Individual I (*i* + 1) offspring** ⇒	**Emotional & intellellective development/maturity or developmental arrest in the developing *i* + 1 youth** ⇒	**Institutions (rites, institutions, & symbols) as exhibited in the *i* +1 generation as young adults**

Cultural Institutions: The Ultimate Antecedent and Consequent Variables

I suggest that it is self-evident that some aspects of culture and of cultural transmission are more important than others. The core or basic framework around which cultural preservation appears to coalesce seems to be a network of rites, customs, institutions, and symbols characterizing a society, sometimes collectively called "institutions." I propose that the core of a civilization or culture may largely be equated with its institutions (in this wider sense) and I shall hereinafter mean "institutions in such wider sense" whenever employing the term in a general and inclusive sense. However, it shall sometimes be advantageous to point out the specific functions of, for instance, rites as distinct from institutions or symbols.

The rites include those of naming, baptism, adoption, achievement of majority, initiation in a fraternity, clan, etc., achievement of earned or honorary titles, marriage, divorce, burial, and so forth. We may extend this list to include more mundane mores and rituals, such as forms of greeting or salutation at encounter and departure, the family meal, the celebration of feasts or holidays, the donning of occasion-specific clothes, ornaments, and insignia, the writing of letters, the conveying of congratulations, the maintenance of mementoes and souvenirs, the practice of inviting guests, etc. Although this is not often easy, one should distinguish here between more permanent and sacrosanct rites, and more transitory fashions of the day.

The institutions include those of the (traditional nuclear and/or extended) family, of political and military/police organs, of individuals or entities providing medical service, of religious and/or ideological organizations, shrines, temples, or churches, of family homes, libraries, museums, and other organized establishments for arts, crafts, and music, of guilds, unions, and fraternities, of cemeteries, and so on. We note that traditionally an institution is typically characterized by a systemic, hierarchical organization (Salthe, 1985, 1993).

For a definition of "institution" in a most extended but not necessarily a Durkheimian or functionalist sense, see Kardiner (1939). Concluding that institutions are "the means of societal continuity," Kardiner cites Ralph Linton's "differentiation between a society and a culture ... : a society is a permanent collection of human beings; the institutions by which they live together are their culture" (Kardiner, 1939, p. 7). Rites, involving social traditions, have been argued to be necessary stepping stones in individual development or maturation. The latter is, for instance, the case in most "rites of passage" (van Gennep, 1960/1908).

There appears to be an organic association of rites, institutions, mores, symbols, and so forth. Thus, the marriage ceremony is a rite, but also creates an institutional unit, the family, and it is, at least traditionally, marked by an array of symbols, as the exchange of rings, the wife (and future children) "joining" the husband's family or clan by adopting his family name, etc.

Parenting and Bonding as Requisites for Individual Development and Cultural Growth

Parenting as described here defines an attitude and a series of activities taking place within a traditional family, and as such family represents an institution, the necessary antecedent for parenting is itself institutional. The model suggested is anchored in institutions on both the antecedent and the consequent side, with vertical cultural transmission and the parent-child bond as intermediary link.

In order for a developing human being to maintain, modify, or abandon some elements (memes) of a society's cultural heritage, such phenotypic heritage (network of institutions in the wider sense) must first have been transmitted to that individual. To build upon, or change, institutions, their prior conservation is required.

I should like to propose that the basic *replicative* mechanism, or, in Dawkins' language, the basic *vehicle*, in the conservation and evolution of human culture, that is, what provides

impetus or goad and condition, for cultural transmission of the institutions, appears to be a function of the evolutionarily conserved parental nurturance and enculturation of the child. The more this is present, the stronger one should surmise would be the *intergenerational bond between parents and their offspring*, each such bond providing a bridging link in a continuing temporal chain of socio-cultural preservation. I submit (following Bowlby, 1980), without here assembling evidence therefor, that the nurturing mechanism and the ties which unite parents to their children are unique, have been evolutionarily selected and conserved for their relative benefit to cultural preservation, and are, *ceteris paribus*, of greater intrinsic value to cultural preservation and refinement (evolution) than most oblique or horizontal influences. Where both "cultural evolution," as well as individual development are characterized by *increasingly greater differentiation and integration at sequentially higher levels of organization* (Gottlieb, 1992; Salthe, 1993, 1985; Werner, 1957), a concept originally developed by Goethe two centuries ago, in his *Morphologie* (on the morphology and developmental cycle of plants.)

Based upon this formulation, I should like in this dissertation to focus upon the requisites for, and the effects of, the enculturation mechanism which transmits *dedication to institutions from parents and parent surrogates to children.* I focus upon three connected aspects of what I here advance to be this essential vertical bonding mechanism: (a) sheer parental presence, (b) the didactic and hierarchical nature of parenting , and (c) the effective transmission of customs, reading/writing, and "magic of the past" (as in fairy tales, legends, sagas, holy writ, ballads, religious and similar music, etc.) (where (a), (b), and (c) *conjointly* imply what developmentalists have labeled the "authoritative" style).

The modeling involved here is not merely informational, for it is at heart an emotional fervor or depth which is being transmitted. A consequent of such parent-child dyadic bonding, may be the engendering in the child of a cascading proclivity for bonding, for veneration and

depth of commitment – for other salient objects, including, above all, both family members and institutions. However, the transmission of the emotional bonding capacity itself must be interwoven with a cognitive dimension. This, because "raising" a child involves a simultaneous focus upon similarities and differences. That is, the developing child learns how to distinguish and discriminate, between parent and nonparent, the familiar and the strange, the roles of mother and father, the deep and the superficial, and so forth. The child's beholding of the difference and distinction between the older, at least presumably wiser, more knowledgeable, more mature model parent and the self as younger, less developed, less mature, emulating child, may represent precisely the *raising* or *upbringing* impetus or goad in the child's development. Similarly, the presence of *both* parents, would provide the quintessential model for gender and role differentiation for the developing child. Developmental and evolutionary forces are not seen here to be in a "dialectic" opposition (Salthe 1993), but in inseparable interaction. Each individual's development is a necessary link and each link which fails is analogous to a mutation.

Two additional points have to be raised at this juncture. The mere presence of parents does not ensure parental transmission! (And, of course, similarly for oblique or peer figures[19].) Parents may be present, but quite neglectful. Other parents have abdicated the traditional parental role, and have opted to be nondidactic, nonauthoritative, permissive, or picture themselves their children's playmates or "buddies" (Baumrind, 1993). They are only biologically parents, and are agents of gene replication, but not of vertical cultural replication. In such case we fail to have the precondition for vertical transmission defined above: The presence of two parents functioning as the primary nurturing and model figures in a traditional family setting. Such traditional family setting, in being the quintessential link and portal to past culture, provides the connecting link to

[19] Thus, Chen, Cavalli-Sforza, and Feldman (1983) report on the case of older Taiwanese siblings, who are sometimes more influential than parents, and where parental influence tends to be mediated through them.

the values, and, if you will, the magic of the past, as, for example, through the parental (or grandparental) transmission of (written or spoken) fairy tales, legends, sagas, ballads, or holy writ, to the child. In summary, the "parents-acting-as-parents" effect cultural transmission in a threefold manner: (1) by acting as hierarchical ("raising") and differential (identity-conferring) role models, (2) by conveying dedication to institutions (rites, mores, etc.) anchored in tradition, and (3) by providing an atmosphere of love and bonding. All three are here hypothesized as necessary for the development of maturity in the growing child; where the term maturity embraces emotional or psychological maturity as well as cognitive competence.

Maturity versus Developmental Arrest: Next Link in the Chain

How does the young adult demonstrate the presence of emotional maturity, or of differentiation competence? Emotional maturity is herein operationally characterized by specific questionnaire response items indicating such as a belief in decency, the display of a modicum of stoicism ("maintaining a stiff upper lip"), a continuance of friendship over the years, a nostalgia for one's roots, an attachment to one's home and family (as opposed to, say, peer sleep-overs), a preference for one-on-one over group social activities, and a proclivity for writing letters, reading, and studying (as opposed to the telephone and TV), a declared preference for the company of great historical figures such as scientists, philosophers, artists, or religious figures over a current action movie hero, a dedication to cultural institutions and values, and a preference for seeking adult over peer advice. The study is, therefore, to a considerable extent an investigation of questions anchored in what might be termed a traditional and "Eurocentric" view of culture, and would thus be limited in its findings to that Western culture.

Early ethologists (Lorenz, 1965) had stressed the importance of a critical (later sometimes termed "sensitive") period for both emotional maturation as well as the development of cognitive differentiation skills. Filial imprinting, reported on by Lorenz long ago, is still a focus of study today. Thus van Kampen (1996) reports on filial imprinting in chicks, and sees a search mechanism and reward system, which indicate a learning process he sees as similar to "classical conditioning."[20] Evidence has been accumulated that early cognitive deprivation may lead to developmental arrest. Thus, Eibl-Eibesfeldt (1988) reports on the early developmental determination of *fixed action patterns* which have analogues into the cultural domain of humans.

After the ontogenetic biological differentiation and integration organizational hierarchy is well on track, in a highly altricial organism like *Homo sapiens*, hierarchical organization continues for many more years than in most mammals, as the human organism's *extended phenotype system* gradually builds up a more adequate *hierarchical differentiation competence*, capable to generate its complex behavioral repertoire and its socio-cultural institutions. (Dawkins, 1989, 1982; Gottlieb, 1992, 1991; Salthe, 1993, 1985).

For the purposes of this study, cognitive differentiation competence is operationally defined by scores on three cognitive tests, principally the (Witkin-Oltman) Portable Rod and Frame field-dependence/independence test, and secondarily, by the Porteus Mazes task (Vineland Revision), and the Picture Completion subtest of the Wechsler Adult Intelligence Scale-Revised (WAIS-R).[21] Cognitive differentiation competence (and maturity) may also be held related to certain specific questionnaire items on being more or less discriminating in matters of privacy, as

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[20] Although, from the description, it should more properly be labeled "instrumental conditioning."

[21] The WAIS-R was replaced about a decade ago by the WAIS-2, and subsequently by the WAIS-3. As the differences between the successive versions are relatively minor (especially as to this subtest), and to facilitate comparison with prior studies (including that of this writer) it was decided to maintain the old test for this study.

to familiar/infantilistic versus formal/adult forms of language and address, and on the distinctions between roles and statuses.[22] In summary, differentiation competence (herein) involves the capacity to abstract and free oneself from the field, to focus upon details, to shift between and note the relationships between details and field, and to *organize* by noting and imposing inclusionary and exclusionary criteria creative of categorization and classification. Some of these indices partake, of course, of an admixture of emotional and cognitive aspects. Of the three cognitive tests, the Witkin-Oltman Portable Rod and Frame differentiation, or field-dependence/independence, test should probably be considered by far the most relevent.

Admittedly, both genetic heredity and cultural heritage play (together with the developmental dynamics themselves) a role in the development of emotional and intellective maturity. Thus, when considering demographic data as indicative of antecedents, there is no denying the genophenotypic gene-culture codetermination of the father's profession, for instance, nor of the similar codetermination of the offspring's cognitive competence and emotional maturity. However, this empirical dissertation study is not yet another attempt to tease apart the contributions of nature versus nurture, nor of the genotypic versus phenotypic variances involved.

Findlay (1990) showed (in a theoretical study) that in a uniparental variant for cultural transmission of the Cavalli-Sforza et al. model, mean fitness can evolve in the absence of genotypic variation in the case of vertical (but not oblique) transmission, although the rate of change may be negative. In the simple linear case and assuming the same environmental variance

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[22] The items which are here listed and suggested to be characteristic of "emotional maturity" and "cognitive differentiating competence" were not picked at random, but are derived from a series of analyses (ranging from principal component to canonical analysis) in a prior study (N = 666 students of approximately the same age and demographic background as the subjects being tested in the present study) by the writer (unpublished doctoral dissertation, 1994). The initial impetus for these indices goes back to early work on "differentiation" championed by Heinz Werner (1957, 1948) and a number of other investigators, mostly associated with Clark University from the 1940s to the 1990s.

for each genotype, he showed that with the probability of an offspring developing fitness phenotype m depending on the transmitting parent's[23] genotype A_iA_j and phenotype m', this results in $\Psi_{ij}(m|m')$ (compared to $\Psi_{ij}(m)$ with purely genetic transmission), given that the transmitting parent has genophenotype $A_iA_j(m')$. From this he derives that for a biocultural population the fundamental theorem of natural selection becomes e^{-kt}, which is to say that the rate of change, under biocultural transmission, in the mean biological fitness of a population is equal to twice the covariance between offspring and parental fitnesses. From this the mean biological fitness of a population can reduce to $\frac{d\overline{m}}{dt} = \overline{\beta}V_E$ where $\overline{\beta}$ is the regression of offspring on parental fitness averaged over all genotypes (compared to Fisher's $\frac{d\overline{m}}{dt} = V_A$).

Granted that culture is not the same as fitness (however inclusively defined), nevertheless, if we assume that enculturation (with traditional, parental culture) enhances the maturity and sophistication of an individual, then, if not Findlay's coefficient β in the foregoing formulation, certainly Cavalli-Sforza and Feldman's coefficient β (see discussion above) to the extent to which such $\beta > 0$ (which is to say, to the extent to which vertical transmission is reduced to zero), defines (in the reverse sense to Findlay's) the degree to which *parental cultural transmission is eliminated.* In Findlay's formulation (and Kirkpatrick & Lande, 1989 conclude

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[23] Assuming "that while reproduction is biparental, cultural transmission is uniparental" (Findlay, 1990, p. 370). It is a point of view not shared by the thesis herein, nor by some of the empirical findings of this study. (Those correlation analyses, outlined in Chapter 4 and interpreted in Chapter 5, below, in which there was an input of a detailed profile of presence/absence in the home of the father *and* the mother [as opposed to only an aggregate of "parental presence"] at various age-levels of the child, tended to show distinct and diverse roles and influences upon the child for paternal as oppposed to maternal presence in at least some areas. In short paternal and maternal presence cannot in some important spheres readily substitute for one another, are not equivalent, and may not, without serious loss of content, be merged into uniparentality. *Homo sapiens sapiens* cannot be regarded as a cultural haploid.)

similarly) phenotype here invades genotype, which is to say that phenogenotypic fitness is under these circumstances decreased.[24]

Application of the Genetic (Dawkins and Cavalli-Sforza/Feldman, et al.) Model

Paradigm and Nomenclature

Let us assume that the set of constellations of cultural traits of generation i, which are associated with or represent institutions, may in vertical transmission be passed on to generation $i + 1$. This set of constellations of cultural traits is deemed transferred as a set of meme-like blueprints we will call memes. Let $\{m_a\}_I$ be the set of such memes where each element, m_1, m_2, m_3, etc., "codes" for a different constellation of meme-sub-units, that is a different "meme," say initiation rites, coming of age, burial, or god. If we now assume a society to be composed of an array of families highly similar or culturally homogeneous, then nevertheless there will be variation of each such meme in each generation of such society, similar to some polymorphic heterogeneity or accumulated genetic drift. That is, to take an example from Dawkins, the "god meme," which we may designate as m_1, has several forms, ranging from the highly anthropomorphic, to the pantheistic, etc. The proportions of these variations may change from generation to generation (akin to genetic drift). Durham (1991), following the analogy of allelic

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[24] However, I am not sure I can divine what this portends. Let us assume that this diffusion (mutation) applies and runs (over many generations) to the asymptote of *extinction* of traditional *culture*. No conclusion as to change in biological (genotypic) *fitness* for *Homo sapiens sapiens* can be implied from the disappearance of maturity or human cultural institutions. That is because, in the absence of selective mating driving the human population significantly into the direction of phenogenotypic *subspeciation*, there will be no selective evolutionary *genetic* pressure favoring "high cultural heritage/mature" individuals. The extended phenotype would – under the influence of the horizontal "mutation" -- act as a selection factor, favoring (through absence of the memes) the elimination of cultural institutions. The possibility I am raising here, is that the extinction of *the cultured human being* (*Homo sapiens sapiens*) does *not* necessarily equal that of *Homo sapiens*. However, this is already taking us too far into rank conjecture and away from the here possibly obtainable empirical information.

forms of a gene, has proposed the term "allomemes" for such varying forms of a meme. However, occasionally there can be a "mutation" *between generations*, as when the belief in God is replaced by atheism.

An individual **I** in generation $i+1$ is the recipient of memes from three sources, vertical (parental, grandparental) ("V") and oblique (other adults)("O"), both of which are cultural transmissions from generation i, as well horizontal (peers) ("H") with the latter representing cultural transmissions from generation $i+1$. There may be covariance and interaction effects (similar to epistatis, pleiotropy, dominance effects, penetration differences, etc.). Thus the "education meme" may preempt the "chauvinism meme," but only "modify" (in Durham's terms, create a different allomeme of) the "god meme," etc.

As implied in the argument, we assume a Markov chain, where at any time only two generations (ignoring grandparents, grandchildren, etc.) exist in the field. We assume no temporal overlap except for that required for the vertical cultural transmission to take place. Our focus (the "developing individual" or "**I**" in the above "Basic Model") is upon generation $i+1$. In this we assume that the n individuals in generation $i+1$ only receive cultural transmission from generation i and generation $i+1$, and that there is no (backward) transmission from $i+1$ to i.

Let us then assume the following nomenclature:

P^V = father (P) who is present and acts as a father (i.e., vertically = V)

P^H = father (P) who is present but acts as a peer (i.e., horizontally =H)

$P^{\emptyset}$ = father (P) who is absent (= Ø)

M^V = mother (M) who acts as a mother (i.e., vertically = V), and so on.

At this point we do not differentiate between horizontal figures, designating them all aggregately simply as ΣH, nor between oblique figures, designating them all collectively as ΣO.

That is, we ignore, for the present, the possibility of, say, an O^V (an oblique figure who acts as a parent), an O^H = oblique figure who acts like a peer, and so forth.

Now, let $\Phi(P)$, $\Phi(M)$, $\Phi(O)$, and $\Phi(H)$ be the probabilities that P, M, O, and H transfer their memes to $\mathbf{I_K}$. A general formulation is *not* rendered by a simple additive or linear model, in which the several transmitters (P, M, ΣO, ΣH) are first multiplied by their respective probabilities, then by the set of memes (say, $\{m_a\}$), the products are then added, and so forth. This is because the relationships are more complex and not additive. Although the following design is admittedly replete with a lot of arbitrary elasticity, it is offered as presenting a more sophisticated rendition of the critical relationships involved.

What concerns us is the likelihood (probability) of parents acting as parents transmitting "*culture*" (*i.e., "cultural heritage"*) to their offspring. Everything evolves about the transmission of *culture* (that is, institutions, rites, traditions, folklore, values, etc.). Thus, the question at issue is to what extent is culture (C = the aggregate superset of all memes Σm) being transmitted to the i+1 individual, $\mathbf{I_K}$?

The parents are not required to be "cultured" or educated, but they (of the i generation) are expected to transmit to $\mathbf{I_K}$ a proper *dedication and respect* for cultural heritage, that is, specifically, cultural "institutions" (including that of the family) in the wider sense of that word. As operational marker variables for such transmission I have focused upon (a) "written fairy tales" read or told in oral form by the parents (or grandparents, etc.) to the very young (preschool age) child, and particularly, if such is then followed by such tales being *read* by the older (now school age) child, (b) the amount of time the child was induced to spend at home and engage in activities like reading in general, and (c) extent of respect for the role models of parents and elders, and of traditions instilled in the child. In the transmission of fairy tales to the child, in the amount of time the subject reported to have spent home as a child, and in questions dealing with

respect and nostalgia for the past, two of the three aspects of vertical cultural transmission spelled out above (37), of "parents acting as parents," are implied. The third aspect (role models) is most simply related to the sheer continued presence of both parents throughout childhood.

A Caveat: Agents Versus Content of Transmission

I propose a caveat is in order in the adoption of the nomenclature of "vertical," "horizontal," and "oblique," employed by Cavalli-Sforza, Feldman, and their associates and adopted by just about everyone (Avital & Jablonka, 1994; Boyd and Richersen, 1985, 1983; Durham, 1991; Findlay, 1992a and b, 1991, 1990; Lumsden, 1988; and others). All these investigators define vertical (cultural transmission) as being from parent(s)-to-child, horizontal as from peer(s)-to-child, and oblique as from nonparental adult(s)-to-child. Cavalli-Sforza et al. (1982) do note that occasionally vertical cultural transmission takes place through peers (Chen, et al. 1983) or through oblique figures (Cavalli-Sforza, 1998, personal communication).

To be exact, we should not define such transmission in terms of the messengers, but of the messages. Vertical cultural transmission consists of the transmission of information (in the presence of an associated affective component) from the i generation to the $i + 1$ generation, and so forth, in a Markov chain. Usually parents are the primary transmitters – but not necessarily. Grandparents, oblique figures (such as teachers or clergy), or peers (especially elder siblings) may be the agents or messengers of of vertical cultural transmission. Similarly, usually peers are the transmitters of "non i generation" information (that is innovative or mutative "cultural" information) – but not necessarily. Therefore, when I employ "parental transmission" as equivalent to "vertical," "peer" transmission as equivalent to "horizontal," etc., this is only a convenient shorthand. The fairy-tale, home-presence, writing, etc. indices herein, hopefully as an indirect benefit will correct for this shorthand deficiency – but only partially, insufficiently.

Definitions: A Specific Nomenclature for this Study

Let us assume the probability of paternal, maternal, oblique, and horizontal (peer) presence and functioning as cultural transmitters, that is the final effective net probable transmitting presence in childhood of $\mathbf{I_K}$ to be rendered, respectively, by $\Phi(P)$, $\Phi(M)$, $\Phi(O)$, and $\Phi(H)$ (employing the symbols O and H, rather than the more exact $\sum O$ and $\sum H$, from now onward) and to be each in a range $0 \leq \Phi(X) \leq 1$. Let us call a father acting as a parent/father P^V, a mother acting as parent/mother M^V, a father acting as peer and buddy rather than as parent P^H, a dead or otherwise missing father $P^{\varnothing}$, similarly, a mother acting like a peer or absent respectively M^H or $M^{\varnothing}$, etc.

Let us assume for purposes of assessing whether vertical cultural transmission exists, that a parent acting nonauthoritatively, permissively, or like a "buddy" and not like a parent (e.g., not transmitting fairy tales, not fulfilling traditional parental didactic functions), is virtually or entirely equal to an *absent* parent, which, for example, means $P^H = P^{\varnothing}$, and so forth.[25]

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[25] We should ideally now add one final wrinkle. One learns not only by copying model figures, but also by identifying and comparing the figures *not* to be copied. Thus, the best differentiation is acquired by the simultaneous juxtaposed presence of the role-model-to-be-copied *and* the ones *not* to be copied (same gender parent versus other gender parent; parent versus stranger, parent versus peer, etc.). In other words, some modest presence of peers and oblique figures together with a decisive parental presence is more instructive of differentiation, of appropriateness of what should and what should not be emulated, than if the childhood were characterized by the sole presence of parents, with a total absence of all other human beings. As an example only, this might lead to such differential formulations as
(1) if $\Phi(P^V) \approx 1$ *and* $\Phi(M^V) \approx 1$, *but* $0<\Phi(O)<<<1$ and $0<\Phi(H)<<<1$ (that is, both O and H are greater than 0 but significantly less than 1), then $\Phi(C) = 1$. However,
(2) if $\Phi(P^V) <<< 1$ *and* $\Phi(M^V)<<< 1$ (because of P^H or $P^{\varnothing}$ etc. *and* M^H or $M^{\varnothing}$ etc.), *but* $0<\Phi(O)< 1$ and $0<\Phi(H)<1$, then $\Phi(C) = 0$. And similarly,
(3) if $\Phi(P^V) \approx 1$ *and* $\Phi(M^V)<<< 1$ (because of M^H or $M^{\varnothing}$ etc.), *but* $0<\Phi(O)<<<1$ and $0<\Phi(H)<<<1$, then $\Phi(C) >>> 0$. [I.e., $0 <<< \Phi(C) < 1$]
(4) if $\Phi(P^V) <<< 1$ *and* $\Phi(M^V) \approx 1$ (because of P^H or $P^{\varnothing}$ etc.), *but* $0<\Phi(O)<<<1$ and $0<\Phi(H)<<<1$, then $\Phi(C) >>> 0$. [I.e., $0 <<< \Phi(C) < 1$], and so forth for other combinations of the whole instructional milieu of the child.

Let us have "Vertical/authoritative transmission" herein be used to denote "parental presence *plus* the parents transmitting (e.g., fairy tales) *and* in a didactic role (as authoritative models, rather than permissive 'buddies')."[26]

Cavalli-Sforza, et al. (1982) assumed triads for the first vertical transmission step of their simple model: father, mother, and one child. They considered as base case a single trait which exists in only two states, H and h, the first reflecting "the result of specific irreversible learning," and the second "the naïve condition." Vertical transmission was then defined by p_i standing for the relative frequency of each of the four possible types of parental pairs (h x h, h x H, H x h, and H x H), and b_i standing for the transmission coefficient or probability (assumed equal for the two sexes) that a "mature" (entrained) offspring H is produced from the respective parental pairs (by contrast, h = no vertical cultural transmission to have occurred). From this the proportion of H is given by $\sum_{i=o}^{3} p_i b_i$ (not necessarily the same as the frequency in the parental generation, where $u = p_3 + (p_1 + p_2)/2$). Assuming this to be additive, leads to the following

Father (P)	Mother (M)	Frequency of pair (p_i)	Transmission coefficient	Expected values of b_i
h	h	p_0	b_0	β_0
h	H	p_1	b_1	$\beta_0 + \alpha_M$
H	h	p_2	b_2	$\beta_0 + \alpha_F$
H	H	p_3	b_3	$\beta_0 + \alpha_M + \alpha_F$

I forego this and similar attempts to be more realistic and accurate within the confines of the present study, because it would be very difficult to determine 2valid and reliable measurements for such refinements.

[26] I am cognizant of two potential problems. First, there may be a lack of agreement between what parents believe themselves to be and what their children believe them to be. Secondly, belief is not necessarily reality.

Inherently: This is a Conflict Model

However, as Cavalli-Sforza, et al. defined β_0 as representing the maximum to the possible contributions of horizontal and oblique figures, to the extent to which $\beta_0 > 0$, to that extent must also $(\alpha_M + \alpha_F) < 1$. This *is* an implicit conflict model, although Cavalli-Sforza et al. did not so define it. The formulation amounts to stating that to the extent to which horizontal or oblique transmission takes place, to that extent is vertical (parental) transmission *reduced.* (Although this is trivial, it should be noted that as the equation in its two forms $\beta_0 + \alpha_M + \alpha_F = 1$ and $\beta_0 = \{1-[\alpha_M + \alpha_F]\}$ can run in either direction, the obverse of that statement is, of course, equally true.)

This permits a modest, but critical, reformulation. Since β_0 may be stated to represent the *reduction (or displacement) of vertical transmission* due to the presence of other transmission (*non*vertical), it can be equated with the diffusion (mutational or epidemic) vector.

In terms of (the epidemiological version of) diffusion theory, to the extent to which many individuals will each have $\beta_0 \rightarrow 1$, to that extent will a *population* of such persons fit, say, the EMOSA model, where the proportion of all children of age (t) susceptible to the "contagion" implied by β_0, and showing resulting "immaturity" at the subsequent young adulthood age ($t + 1$), can be expressed by $P_{t+1} = P_t + \beta_0(P_t)(1 - P_t)$, with the proportion of those (whether susceptible or not) who were subject to the contagion (mutation) in childhood (age t) having been $P = (P_t)(S/N)$, where S = number of susceptibles and N = all children of that cohort.

This presentation of proportions is expository only. In the actual statistical analyses of the current study, of the empirical data derived from testing the subjects, such will in most cases be simplified by working with principal components, rather than individual indices (variables).

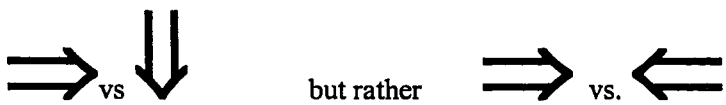
Namely, those components characterized by highest loadings shown for such marker variables as (1) sheer paternal and maternal presence and (2) vertical transmission of (written/told followed by *read*) fairy tales, homecentredness, etc., in each of the cells analogous to the above grid. To the extent to which any value so substituted for any α_M or α_F will approach zero, to that extent will the "contagion" (β_0) $\rightarrow$1 at t+1 for the contribution of that cell. Of course, in a complementary manner, converging into this, we have direct measurement of horizontal influence (the "contagion"), in such (components loading high on) variables as the sleepover, television and telephone usage, absence from the home, etc. In the final presentation, whereas it shall generally be more prudent to employ the empirically-derived principal components, it may sometimes elucidate better, to focus also upon correlations involving very specific variables.

Now, there is a point at which a contagion factor becomes overwhelming. That is, there is a point at which the influence of horizontal, mutative, or peer forces all of a sudden becomes all-powerful, sweeping all vestiges of vertical influences away. Though to an insufficient degree, this is implied in the rapid rise of the (S-curve) function depicting the rapid spread of an innovation in the society, following a gradual initial growth, in the formulation of diffusion or innovation theory (Rogers, 1995, 1962).

Reality points farther, indicating that we might have to substitute a function of complete inflection/reversal at such "critical mass" moment (at which the function is "not defined," that is, is discontinuous). It is the point at which, for want of a better analogy, "the dam bursts." At this point *instantaneously* $\beta_0 \Rightarrow 1$! Which is to say, at this point also parental transmission = 0! Certainly, the data should be analyzed to see whether they do or do not fit this extreme forecast (that is, the world without parental input beheld by Judith Rich Harris and of the Alorese, both set forth above).

In short, taking epidemiological and diffusion/innovation models one step farther than they have traditionally been taken, one must consider the possibility of extinction, that is that sooner or later, as with most organisms, so the "culturally-sophisticated" *Homo sapiens sapiens* may also become overwhelmed and replaced. Perhaps replaced by a successor to the species. Every equivalent of a "paleoterrific" denizen is sooner or later entirely destroyed (Fox, 1990).

To depict this scenario more succinctly, one should, therefore, first of all, substitute a clearly antagonistic notation for one, which the terms "vertical" and "horizontal" might lead one to conclude, namely that the encounter of a vertical with a horizontal axis may lead to some compromise vectorial resultant. Where the "vertical" meets the "horizontal" antagonistically, there is no fusion or compromise between the two. One or the other must budge. Pictorially or geometrically, the best rendering is thus not



which is to say, that in the *union of the two models*, the resultant – in the case of any specific allomeme – is not Lamarckian, but Darwinian.[27] At any one occasion, one either sleeps at home or one goes to a sleepover; one either wears a black suit to a funeral, as one's father or grandfather did, or one doesn't; one either wears a turtleneck or a formal shirt; one either dons a necktie, or one doesn't; one either goes through a formal wedding ceremony, or one simply lives

[27] Although, instead of following nomenclature hallowed by modern tradition, if one were to be logical and historically more accurate, one would think of the passage from generation to generation of discrete (unmingled, unmixed) single (smallest) "characteristics," whether memes or genes, as constituting, as Mendel called them, *Merkmale*, and thus more properly termed Mendelian or Mendelian-Weismannian, rather than Darwinian. Darwin may be the father of the theory of evolution in biology; however, Mendel, and not Darwin, is the father of genetics and the grandfather of the modern "gene" concept.

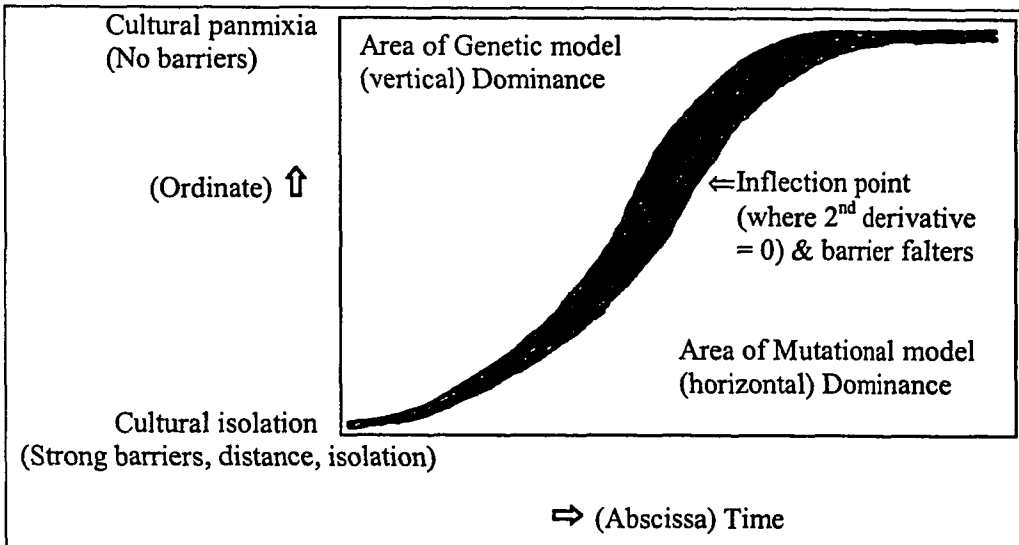
together; one either attends religious services or one engages in secular activities instead. One either eats at home or one eats out; one is either on a first name basis only with one's friends, relatives, and children, or one uses first names indiscriminately; and so forth. Every encounter between the two models results in either the "genetic" analogue (vertical, traditional, parental, etc.) example being followed, or this being aborted by the "horizontal" (epidemiological, peer) influence. Or as to one aspect, following one model, and as to another aspect hewing to the other model – so that the composite might look like a *blend*, but each single piece of behavior, each allomeme (to use Durham's terminology), when closely examined in isolation, turning out to be *either-or*. (Admittedly, there is some drift, and a lot analogous to epistasis and pleiotropy.)

The current trend, reminiscent of a trend to fixation, is for the eventual displacement of all "vertically-derived" allomemes, and their replacement by "horizontally-derived" ones. This is so, because *in the absence of isolation by distance or some other barrier*, heterogeneity or diversity must perforce eventually gradually wither, the horizontal diffusionary, epidemiologic or ecologic forces (gradually or rapidly) overpowering the phenogenetic (vertical) ones making for conservation of "heritage." This "integrated" picture may be rendered as in Figure 1, below:

Figure 2-1

"Integrated Model"

Integrating the Genetic, Epidemiological and Barrier (Distance/Isolation) Models



This is similar to an x^3 function, with a cut-off parameter at its maximum, shown by the "most of an S-lying-on-its-side." Area (by integration) below the curve, is the area of horizontal dominance, the mirror-image, complementary area above the curve, of vertical dominance. Unstable shifting occurs in the zone of inflection (where the barrier collapses). The curve is *not* a thin line, but a band, broad everywhere (indicative of some diversity, or individual differences) and broadest near the inflection point.

Although this is a further sophistication the present study does *not* set out to investigate, for the sake of completeness or closure, of the overall model proposed herein, one may simply define all oblique transmission as being subject to partition into horizontal [mutative, peertel] or vertical [conservative, parwrit] components. It is likely that some elder family members, (at least traditional) members of the clergy, some teachers, "classical" literature, etc. will act primarily in a "vertical" transmission-reinforcing manner, whereas Orwell's 1984 "Big Brother," rabble rousers, internet voice-chat, and "action" movies will tend to act in a "mutative" (typically leveling or

horizontal) manner. The school setting of the subjects combines diverse aspects: Legally *in locus parenti*, some teachers and some education act in a "parent-surrogate" and "vertical-reinforcing" manner, much more here constitutes oblique (one-on-many) cultural transmission. Aspects of vertical and horizontal transmission are not easy to tease apart, and the backdrop of the many peers constitutes a horizontal vector. It will be recalled that for over 98% of the population, the school has only existed as parental-successor of education for some five to six generations.

Levels and Hypotheses of the Study

Levels and General Thesis

This study has three levels. First of all, it proposes (as is intended to be portrayed by Figure 2-1, above) a general "conflict" model, one integrating several existing models and concepts ranging from several related concepts as to the function of *barriers* or distance attributable primarily to Sewell Wright, to what may be called the genophenotypic or *genetic* analogue model of Cavalli Sforza, Feldman and others, primarily explicative of vertical transmission, to a diffusion or *epidemiological* model, primarily useful in explaining horizontal, peer, "tele-media" and other non-traditional cultural transmission, to a *critical mass*, inflection point, or punctuated equilibrium function to help explain what is proposed to be a nonlinearity in the encounter of the vertical and horizontal forces. In addition, these models, and especially the "barrier" and "genetic analogue" functions, are provided with "depth" by the addition of a developmentalist dimension informed of *"Bowlby's ethological model"* on child-parent bonding (as without such addition, they tend to be merely involved with information-processing) as well as the concepts of Kuo (1976) and Gottlieb (1992) relating individual development, tradition, and dramatic changes in child-rearing practices to behavior sometimes driving genetic change ("behavioral neophenotypes"). The latter may, these investigators suggest, in the extreme, even

cause speciation and extinction. (Preferably, one might view such "neophenotypes" as the unforeseen product of autogenerated changes in the extended phenotype and ecology due to modernity and its baggage of industrialization. I.e., shrinking distance due to modern transportation, telecommunication, etc. – exploding the effective neighborhood from comprising a few square miles to extending to almost the entire world, in the space of a few generations.)

On a second level, within the schema of such a multi-dimensional model, this study proposes a general thesis as to what is facilitative of, and what militates against, the transmission and perpetuation of sophisticated culture and maturity from generation to generation of *Homo sapiens sapiens*. As outlined in the "Basic Model" (Table 2-1, p. 38, above), this general thesis proposes (a) that a dedication to cultural institutions may only thrive with (b) the emotional maturity and cognitive competence of the young adult, and this (c) will in significant part be determined by the prior relative presence or absence of vertical cultural transmission. This is then anchored to the admittedly somewhat arbitrary adoption of certain marker variables on both the predictor side (parental presence, fairy tales, reading/writing, hierarchical stance of parents, etc.) and the criterion side (test items putatively measuring emotional maturity and cognitive differentiation competence). Again, in practice it will be easier to use principal component analysis, and then to see what components show high loadings on such marker variables.

On the third level, a series of specific hypotheses are derived from the general thesis.

Formulating the Basic Questions Underlying the Hypotheses

Before any other analyses, principal component analysis is applied, to make the number of variables more manageable, and to show what, in fact, empirically hangs together with what. This should also permit the empirical test of the premise underlying the thesis hereof, namely that childhood variables such as maternal and paternal presence in the home, fairy tales, reading,

number of languages learned, sleepovers, time spent at the TV or on the telephone will indeed turn out to be salient indices, "driving" some of the extracted components, by presenting very high component loadings. Similarly for some of the variables measuring the functioning of adulthood; and finally, for correlations between them.

The basic question is, whether such correlations, amounting to *vertical* transmission scores, on (components loading high on) parental presence, fairy tales, etc., when juxtaposed to what represent *horizontal* transmission scores, on (components loading high on) sleepovers, telephone time, etc. will indeed turn out to show a *conflict*, as exhibited in a salient pattern of negative correlations. A second general question is, whether high vertical transmission scores in the presence of low horizontal coefficients, will indeed turn out to predict adult maturity and sophistication, whereas the opposite pattern will predict adult "deficits." The third and final general question becomes, whether, in fact, high vertical cultural transmission (from i generation parents), in the presence of low horizontal influence, does predict that the subsequent adults of the $i + 1$ generation *will resemble their parents more than their peers, whereas in the obverse case, they will turn out to resemble their peers more than their parents.*

Ancillary questions may then be asked in terms of the varying constellations of family members who lived with the subject during the formative years (apart from the parents). What of the role of grandparents? Does the number of siblings which vie with one for attention, during the early critical or sensitive period especially, matter? Schachter (1959) and his group have maintained for almost half a century that it does matter, first-born and only children being putatively more "affiliative," and with such affiliativeness then dropping off with the number of children in the parental home. The Zajonc (1965) group has presented evidence for several decades in support of their "confluence model," according to which the I.Q. and cognitive competencies will go down with the number of children in the home, and with children closer

together suffering more. This has recently been attacked (Rodgers, Cleveland, van den Oord, & Rowe, 2000) on the ground that parents of lower I.Q. simply have larger families (passing their lower I.Q.s on to their offspring), rather than that it is the family size per se, which is causative of lower I.Q. and lower cognitive competencies. (It is of interest here to note Wright, 1933, on Order of birth, parent age, and intelligence.)

Specific hypotheses

On the final, or third level, the following more specific hypotheses and corollaries are then derived from such general thesis, and it is only these which are subject to direct support or falsification through the empirical findings of the study:

(1) *"A clear secular shift will be found, in comparing the responses of the two generations (i and i+1), from a greater prevalance of vertical to a greater prevalence of horizontal cultural transmission."* This will be exhibited in such as a general decrease in "family-centeredness," as well as a specific (a) decrease in preference for individual and one-on-one activities, (b) increase in preference for group activities, (c) increase in interest in televideo (telephone, TV, etc.), (d) increase in "sleepovers," (e) decrease in interest in reading and writing, (f) a quite general increase in egalitarianism, (g) decreasing belief in lifelong friendship, and (h) decrease in respect/differentiation with a concurrent (i) increase in familiarity/undifferentiation in linguistic behavior.

(2) *"A clear conflict (expressed in significantly negative correlations) will be found,"* upon examining the various correlations between the "vertically-connected" (i.e., parental presence, fairy tales, writing, etc.) and the "horizontally-connected" (i.e.,

sleepover, peer, "tele-activities," etc.) indices (and extracted components loading high/low on such key variables) for the two generations (*i* and *i* +1).

(3) *"Vertical cultural transmission from parents to children."*

There will be a demonstrable significant positive correlation between the maturity and competence of the young adults and the total vertical cultural transmission (C^V) they had received some years earlier as children, from (or under the guidance of) their parents. C^V entails (a) sheer parental presence and (b) vertical/authoritative transmission of (i.e., "fairy tales" plus "hierarchical/didactic stance"[28]) from such parents to the child.

3.1--As a corollary, it is more specifically hypothesized that parents who have abdicated the traditional parental role, and have assumed a "buddy," nondidactic, peerlike, or horizontal role (*"permissives"*) are by definition no longer acting in the cultural transmission chain, and are thus equal to "null" or absent parents.

3.2--As a second corollary, in the absence or attrition of such vertical transmission *in childhood*, one should find immaturity, developmental arrest, and an impairment of behavioral differentiation and categorization *in the (young) adult some years later.*

3.3--As a further corollary, such (young) adults will vary accordingly in their commitment to traditional institutions.

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[28] Information on "sheer parental presence" and on "fairy tales from parents" is obtained from all subjects and verified through a parallel direct inquiry to a large subset of parents. Information on a "vertical/didactic" stance or style of parenting is only obtained from a subset of the parents (see especially Q56 on both the student and parental questionnaires). It was predicted that a high correlation will be found between vertical fairy tale transmission and such stance or style. What was not predicted, but should raise a slight chuckle, is the overwhelming difference between parental and offspring responses as to the related questions Q54, Q55, and Q57. The difference is particularly salient as to Q54. Half the parents thought that children go primarily to them for advice, rather than to their offspring's peers. The overwhelming majority of the pupil subjects contradicted their parents on this, stating that they primarily look to peers for advice, rather than their parents or other older persons.

(4) *"Greater versus lesser resemblance between parents, offspring, and peers."* Generally, high vertical parents (parwrits) will tend to have high vertical offspring; high horizontal parents will tend to have high horizontals (peertels) as offspring.

4.1 As a corollary, high vertical cultural transmission, from *i* generation parents to *i* + 1 generation children, *as reported by the latter*, in the presence of low horizontal influence, will predict that the subsequent adults of the *i* + 1 generation will resemble their parents relatively more than their peers, as compared to the obverse case.

4.2 As a further corollary, *i* + 1 generation young adults, who *as children* were reared horizontally (as peertels), rather than vertically (as parwrits), will be found more uprooted from all norms -- including even the norms of horizontals of their own generation. Indeed, following the argument of Margaret Mead on this (footnote, p. 21, above), the peertels should even depart (in a random manner) more from the standards (norms) of *their own* "peer group," as in most areas they have come to follow a standard ("of the crowd"), which is "without significance," a standard which is not an *alternative culture or standard*, but an *"anti-culture" or "anti-standard,"* marked by a display of sheer rebellion and disrespect for the traditional and norms.

4.3 As a final corollary, the predictions of the two preceding corollaries as to the *i* +1 generation, will *also and equally apply to the counterpart groups of the i-generation.*

(5) *"Uniqueness of parental roles."* It is further more specifically hypothesized that there is a uniqueness to (natural/biological) parental presence. Oblique figures (adults of the *i* generation other than the natural parents) who fail to approximate by lifelong presence and dedication the traditional role of biological parents are, to the

extent to which they so fail, unable to act as effective transmitters of cultural heritage.[29]

(6) *"Dimorphic gender differentiation."* It is further specifically hypothesized that *both* parents must be present in the child's home to permit the subsequent development of traditional dimorphic (gender) differentiation, *as facilitator of orthogenetic psychological development, general maturity, and erudition.* It is also predicted that in some areas the influences of fathers and mothers will be different. Whereas the various specific directions of such differences are not predicted here (as dimorphic differentiation is in itself *not* a focus of this study), from general evolutionary history and the thesis hereof, it is predicted:

Corollary 6.1: Following from the traditional role models discussed above, paternal presence should, in general, predict greater individuality (field independence, preference for one-on-one and individual over group activities, vigilance, and achievement motivation).

Corollary 6.2: Similarly (from traditional role models), maternal presence should predict greater affiliativeness, communicativeness, and tolerance.

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[29] Thus oblique figures, like parent-substitutes, will rarely act as effective parents, that is as transmitters of vertical culture. In the unique cases where they do so, they will have "approximated" the parental role and bonding status by their demonstrated *permanent presence and continued dedication* to their bond with the child. This is but a restatement of the cited Margaret Mead argument that "transitory" figures in the life of the child cannot have anywhere near the power and status of parents to whom the child is "bound by inalienable ties" (cf. Footnote above). Here I hope to answer the question put to me by Prof. Cavalli-Sforza (personal communication), that, granted that parents have a secularly declining presence, have not by and large their functions been adequately taken over by oblique figures? Empirical evidence that frequent changes of parent-substitutes leads to *indiscriminate* affect in the child (e.g., a child being equally trusting and engaging with total strangers as with the foster parent) is reviewed by Allport (1997). The empirical findings of the present study may cast further light upon this.

(7) *"The critical mass (diffusion/epidemiological) effect".* There is no intent to deny that many elements of the the environment, that is, both ΣO and ΣH, as well as all other aspects of the developing youth's ecological environment, can act to reinforce or to inhibit parental influence. However, from the net effect of this, only the following is singled out here for attention: If during the *the formative childhood* period (probably above 1 and below 15) there is *little or no* C^V *among most of the impacting surrounding population*, then, *in the absence of overwhelming vertical cultural transmission*, the subsequent adulthood of an individual will be characterized by (a) preference of group over individual or one-on-one activities, (b) lack of differentiation and depth in relationships, language (lack of distinction between formal versus informal and distance versus familiarity), and other behavior, (c) preference for tele-instruments over traditional writing, (d) general egalitarianism.

(7) *"Effects of being the eldest or only child ("eldon") and number of siblings."* In an ancillary manner, the Schachter affiliation and Zajonc confluence (as to I.Q. and cognitive competencies) hypotheses will be examined on "eldons" and small versus large families. Relatedly, in terms of the overall model or thesis herein proposed, it is suggested that (less because of genetic, and more because of milieu influence – following Gottlieb's argument cited above, and derived from the general thesis of this study) there will tend to be a higher psychological *differentiation* and *maturity* exhibited in the conduct of a person, rather than intelligence per se (the latter being more genetically and uniquely *organically* developmental), in cases in which there is more parental model figure presence and investment focused upon the individual child. As to some extent there will tend to be a *diminution* of such parental presence and investment *per child,* in cases where there are *many older (or*

equal age) siblings, lesser psychological differentiation and maturity are then predicted to result. In other words, what is proposed – directly derived from the general thesis hereof – is that parental presence (as an admittedly only partial index of parental influence) constitutes the *numerator*, whereas sibling presence (and peer presence in general), constitutes the *denominator*, of a fraction determinative of vertical versus horizontal cultural transmission. This differs from the foci of Schachter and Zajonc (upon affiliation and intelligence, respectively), which are only upon the denominator. (The issue of age differences is not being addressed here.)

(8) *"Gradients"* (increase, or decrease, or a curvilinear increase to an asymptote, followed by a decrease) will be found, indicative of a most *critical* period *within a sensitive period* (probably from about age 2 to about age 10), for the effects of parental and sibling presence in the child's home.

Validation: Internal versus External

When one now applies to these hypotheses, and to the measurements of the variables described above, the specific interview and testing armamentarium detailed below, and tabulates the subjects' responses, this renders a grid of findings versus predictions. That is, the findings of what one may call the *internal* part of the study.

This dissertation should, however, also reconcile any study-specific findings with existing theory and the reported findings of others. In such *external* respect, the findings of this study should be related to especially those findings or theoretical formulations of others which have differed from the findings herein presented. Here, the general integrative model proposed (Figure 2-1, p. 57, above), should function to reconcile specific findings and hypotheses hereof, with diverse existing theory and findings of other investigators.

CHAPTER 3

METHODS, PROCEDURES, AND SUBJECTS

Overview of the Phases and Actual Methods and Procedures

In the five-year period from January 1995 to December 1999 I interviewed and tested 1201 high school pupils in various locations of four countries. The data on 1158 of these subjects were complete enough to warrant inclusion in the final data analysis. The study may best be understood as consisting of three parts, corresponding to three phases or time-periods of testing, with each part including approximately one-third of the subjects.

The first Phase I was conducted between January and April 1995. 367 pupils (12 groups) were interviewed during this phase at 12 high schools in eastern Germany, southern Germany (Bavaria), Switzerland and Pennsylvania. The testing armamentarium consisted of three questionnaires administered in group session (taking about 55 minutes) and three individually-administered cognitive tests (requiring a further 9 minutes of time of each individual subject). Over 80% of the procedures and tests employed with the student subjects (generation $i + 1$) had been used in a prior doctoral dissertation of mine. However, a number of items had been added, particularly in seeking demographic information on the family environment during the childhood and adolescence of the youths (average age just over 18, range of 98%: 16 to 21 years old, at the time of testing). No information was solicited from the parents of these pupils during this phase.

In Phase II (October 1995 to August 1998) further questionnaire items were added and for the first time parents were also requested to fill out a brief one-page questionnaire. The latter was primarily designed to test the veracity and reliability of the students' responses on basic demographic data and a few other selected items, but also included a few questions requesting the parents' views on a themselves and their children. During this time it became increasingly more

difficult to obtain entry to schools, and this in spite of obtaining introductions through the "Blue Ribbon" Program of the U.S. Department of Education and enjoying considerable support from educational governmental and other authorities in Germany, Austria, and Switzerland. Thus, although I approached over 50 schools in the four countries involved, in the end I obtained entry to only 11 schools during this phase. 413 pupils (11 groups at 11 schools) in Maryland, Switzerland, Austria, and northern Germany were tested during this phase. Parental response was quite scant at first (less than 5%) but was subsequently increased through involving school principals in the follow-up, to about 30%, and in some schools to over 40%.

In Phase III (November 1998 to December 1999), in the testing of a further 378 pupils, this testing battery was maintained with the further addition of several items. Thirteen groups were processed (from 12 schools – one school, on an Ojibwe Indian Reservation in northern Minnesota had to be visited twice). Parents were still requested to fill out the brief questionnaire on their children's background, but were also now asked to fill out a lengthy questionnaire on themselves, similar to the base questionnaire on demographics, behavior, and values administered to their children. Entry to schools had become even more difficult. Several U.S. cities either outrightly refused the testing in their jurisdictions (St. Paul) or raised impossible conditions (New York). In Berlin the Educational Authorities forced me to eliminate all "intrusive questions" (in the student questionnaires) on parental profession or religion. All of the 378 pupils tested in this phase were given (in most cases two) parental questionnaires (with attached pre-addressed stamped return envelopes) for their parents to fill out and a strong plea was made that they should "make sure" their parents (and if at all possible, where there were two parents in the household, *both*) would actually do so. In the case of 132 student subjects (35%) one parent, and for 46 subjects (12%) both parents completed and sent in the parental questionnaires.

The parental questionnaires were relayed to me by the school principals in Switzerland and Austria, through the Berlin Institute for Continuing Teacher Education ("BIL") in Germany, and were sent to me directly at CCNY by the parents of student subjects tested in U.S. Schools.

In the case of all schools I employed two assistants to aid me in administering the tests. Usually the principal would introduce me to the students. Then, uniformly I would start a testing sequence by giving a very brief speech outlining the background and purpose of the "interview" (we deliberately avoided the word "test" with the pupils). This would then be followed by the group session (the groups averaged over 32 students, and ranged from less than 20 to over 50). The session ran for about 55 to 60 minutes in Phase I, but had increased in length (in spite of using various strategies to cut down on time) to about 68 minutes in Phase III. This group session consisted of three parts. A basic questionnaire requesting demographic data on the subject and the subject's parents and also asking questions on the subject's interests, behavior, and values, would occupy the members of the group about one-half of an hour. This would be followed by an exercise ("T.A.T.") requiring each subject to create eight brief stories to go with eight provided pictures. As (with control of a stop-watch) only three minutes and 50 seconds would be permitted for each story, this took about another half of an hour. The final group part dealt with the identification and then categorization of the names of twelve "important" people. A main purpose of this exercise was to note with whom the subject would prefer to be associated. The questionnaires are more fully described below and are exhibited (English version; German version available upon request) in the Appendix hereof.

Individually-administered cognitive "exercises" then followed. As a student entered a room set aside for these, one of my assistants would first administer the "Picture Completion" subtest of the Wechsler Adult Intelligence test (WAIS-R). Here the subject would be told the following: "I am going to show you in succession 20 little pictures. I will show you each picture

for only about 20 seconds. In each one there is something wrong or missing. The idea here is for you to tell me what's wrong or missing. For instance, there might be a squirrel without a tail or a person's face without a nose. So in one case you would say 'the squirrel has no tail,' in the other case 'there's a nose missing.' And so forth. Do you understand? Fine. Let's start." Having completed this, the subject would move on to another table where a second assistant of mine would administer the (three most complex of the Vineland Revision of the) Porteus Mazes. Here the subject would be told the following. "Here is a pencil for you to use in this next exercise. Do you see this piece of paper which has three mazes on it? The idea is for you to use this pencil and to start in each case where it says 'start.' See, for instance here [pointing] and then to trace the maze in one line from the start to where you can get out of the maze, for instance here [pointing]. You should go right on from one maze to the other. In other words, do all three mazes in rapid succession. You will be scored in two ways, how fast you can do it (that's why I am using this stop-watch) and on the number of errors you make. Okay, do you understand? Speed and errors are important. Start now, please." Having completed this, the subject would move on to a third table behind which I stood with the Witkin-Oltman Portable Rod and Frame Apparatus. I would say the following: "Please sit down over here. In this box [pointing] there is a rod. Do you see it [pointing]? And around the rod is a frame or box. I can move the rod or the frame or both [turning both in demonstration]. In fact, while your head is in the box I am going to swivel the rod in this direction or that [moving arm] a total of eight times ... and you have a very simple task here. All you have to do is to say, in a very loud voice, please, the word 'NOW' each and every time, the very moment, the second you see the rod in a completely vertical position. Do you know what I mean by vertical? Like this wall [pointing] to the ground. Okay? .... Fine, then, would you just please put your head over here. And, you can help, if you would open and close this shutter or curtain each time I ask you to with your left hand [pointing]. Right,

just like that. Let's start with the curtain closed. ..." After the subject had finished this third of the cognitive exercises, I would say: "well you are finished, completely finished with everything. How was it all, the whole thing, from this morning's questionnaires on ...?" Responses would be typically positive, ranging from "real cool ... I particularly liked the ..." to "something different for a change." I would then say "before you go, there is a pad there, on the first desk, on which you can, if you want to, put down your name and address if you should want a copy of the abstract of the article we expect will result from this. ... But a warning! It will unfortunately take at least two or three years for such an article to be printed." Over 80% of the American students and over 90% of the European students inscribed themselves on such lists. [As I would be closing like this on one subject, a second subject would aproach my table to start the Portable Rod and Frame exercise, while a third one would be doing the Porteus Mazes, and a fourth subject the Picture Completion test, with a few more pupils lined up outside the door, awaiting their turn to be called in.]

Extension to Parents (*i* Generation)

In the case of the last 378 subjects ("final third") tested (from late 1998 through December of 1999), all (pupil) subjects were also requested to have their parents fill out questionnaires as to the *parents'* demographic background, upbringing, conduct, values, etc., virtually identical to the questionnaires the pupil ($i + 1$) subjects had themselves filled out as the first portion of the testing sequence they had just completed. In the case of 132 subjects one such parental questionnaire was completed and sent in to us, and in the case of 46 subjects the second parent also completed and sent in such questionnaire. As to these 46 a "midparental" type was created by averaging the two parental questionnaire responses. This is described more fully in the following pages.

Subjects

In the U.S.A. the interviews and tests were conducted in English, in the three European countries in German. The subjects were uniformly recruited from high schools (chiefly about-to-graduate seniors), with cooperation of the respective school principal or headmaster. Most American schools were contacted with the aid of the "Blue Ribbon School Program" of the U.S. Department of Education. Pedagogic school associations in Germany and Austria, and cantonal school authorities in Switzerland, assisted in the recruitment process there.

There were 43 dropouts, leaving a net of 1158 subjects. Thus total $N = 1,158$.

Of these subjects 568 were males and 590 females. 412 parents also participated, at a minimum to the extent of also providing a completed questionnaire to permit checking the veracity of their children's responses. However, 178 parents (of 132 different students) in addition provided a full demographic profile on their own upbringing and completed all items on a basic parental questionnaire, which paralleled completely the basic questionnaire items on their children. (I made minimal adjustments to a very few questions to give cognizance to the greater age of the parents. Thus, whereas the students were asked as to how many of those who had been their [three best] friends five years earlier, were still among their friends today, the parental form simply changed the "five years" to "ten to fifteen years," and so forth.)

Of the 178 parents, who provided full basic questionnaires on themselves (all during the final two years of the survey) mothers outnumbered fathers in a ratio of 118 to 60.

Schools which participated ranged from Minnesota, there also including two Native American (Ojibwe) Reservation schools, and Wisconsin to Pennsylvania, Maryland, West Virginia and New Jersey in the U.S.A. and to schools in northernmost Germany (Schleswig-Holstein), Berlin, schools in various areas of what had been East Germany, and to the deeply

Catholic area of Bavaria. Several Austrian and Swiss schools also participated. (In these countries also, the interviews were deliberately held in several distinct areas of the countries).

The national background (by country of birth) of those who participated was as follows:

German:	45%	American:	30%
Swiss:	12%	Austrian:	9%

Total of foreign birth in the above 4 countries: 4% (half of these in Germany)

The greater participation of Europeans (as to opposed to Americans) was not planned, but simply resulted from varying success. Basically, the following occurred during the past decade: (a) it has become more difficult in all countries involved to get governmental and school authorities to permit access to schools for surveys or tests and (b) *much more difficult* to gain access in the U.S. In addition to this, it was typically the case that once access had been obtained, European pupils were more willing to participate, whereas American students would either participate only in small numbers, or had to be "bought" with remuneration. On average, once a European school and class agreed, over 80% and in some cases about 100% of the class would participate. By contrast, in most cases (even with pizza parties, class credit, or monetary rewards) only about 20 to 30% of an American class would participate. (There were, however, a few cases where over 90% of an American class participated.)

Table 3-1 – which unfortunately has to be split into two halves – is designed to provide an overview of the battery and response items involved here. Details as to all indices on this table will then be found, in approximately the order of their appearance in the table, in the following pages. The battery of questionnaires administered will be found detailed in Appendices II to IX.

Table 3-1A

A Narrow Window upon the Flow of Cultural Memes through two Generations

⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒⇒

Childhood of *i* generation	Adulthood of *i* generation
Early childhood indices PRIMARY MEAS. I-1 Family integrity I-2 Fairy tales (heard/read) SECONDARY MEAS. I-3 Parental SES I-4 Relocations (mobile) TERTIARY MEAS. Gender Nationality Religious affil. of parents *Later (Adolescence) indices* PRIMARY MEASURES II-1 Time at home II-2 Time with peers II-3 Time reading II-4 Frequency sleepovers II-5 Time watching TV II-6 Time doing homework II-7 Time on telephone SECONDARY MEAS. II-9 # Languages learned	PRIMARY MEASURES III-1 Depth/length of relationships III-2 Relates to elders vs.peers III-3 Indiv. & 1-on-1 vs. group activities III-4 Terms of address, reference III-5 Social distance differentiation III-6 Egocentric/sociocentric values (Q40) III-7 Materialistic/idealististic values (Q40) III-8 Letters vs. telephone III-9 Quality-consc. vs. easygoing III-10 Infantilism in language SECONDARY MEAS. III-14 Stoicism (Q3, 11) III-15 Respect f. parents/ elders (17, 32) III-16 Nostalgia/empathy (21, 23) III-17 Differentiator/egalitarian (5, 10, 12, 18, 28) III-18 Permanent vs. useful friends (9) III-19 Idealism vs. materialism (29, 30, 31) III-20 Exact & serious vs. easygoing (19, 20) III-21 Truthful vs. tactful (22, 33). III-22 Social distance (26) III-23 Companion needed (53)

Table 3-1B

A Narrow Window upon the Flow of Cultural Memes through two Generations

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Childhood of $i + i$ generation	(Young) Adulthood of $i + i$ generation
Early childhood indices	PRIMARY MEASURES
PRIMARY MEAS.	III-1 Depth/length of relationships
I-1 Family integrity	III-2 Relates to elders vs. peers
I-2 Fairy tales (heard/read)	III-3 Indiv./1-on-1 vs. group activit.
	III-4 Terms of address, reference
SECONDARY MEAS.	III-5 Social distance differentiation
I-3 Parental SES	III-6 Egocentric/sociocentric (Q40)
I-4 Relocations (mobile)	III-7 Materialistic/idealistic (Q40)
	III-8 Letters vs. telephone
TERTIARY MEAS.	III-9 Quality-consc. vs. easygoing
Cognitive measures	III-10 Infantilism in language
Gender	III-11 Maturity of social association
Nationality	III-12 Erudition
Relig. affiliat. of parents	III-13 Sophistication of categorization
Later childhood indices	
PRIMARY MEASURES	SECONDARY MEAS.
II-1 Time at home	III-14 Stoicism (Q3, 11)
II-2 Time with peers	III-15 Respect for parents/ elders (17, 32)
II-3 Time reading	III-16 Nostalgia/empathy (21,23)
II-4 Freq. Sleepovers	III-17 Differentiator/egalitarian (5, 10, 12, 18, 28)
II-5 Time watching TV	III-18 Permanent vs.useful friends (9)
II-6 Time doing homework	III-19 Idealism vs. materialism (29, 30, 31)
II-7 Time on telephone	III-20 Exact & serious vs.easygoing (19, 20)
	III-21 Truthful vs. tactful (22, 33).
SECONDARY MEAS.	III-22 Social distance (26)
II-8 Rating of school	III-23 Companion needed (53)
II-9 # Languages learned	III-24 n-Achievement
	III-25 n-Affiliation

Armamentarium for interview and testing of the i +1 subjects

Initial Armamentarium (maintained from 1995 onward)

(Administered to all (1158 i +1 subjects) during group sessions)

1. Basic Questionnaire

Questions on Demographics:

a. sex (m/f)

b. place of birth

c. yr & mo (but not exact date) of birth

d. foreign languages learned

e. language(s) spoken at home

f. religious affiliation of father*

g. religious affiliation of mother*

h. profession of father*

i. profession of mother*

j. who lived with you at home when you were 1 2 5 10 15 yrs old?

Father? Mother? Grandparent(s)?

Other relatives? Other non-relatives?

* In the City of Berlin, Germany, the Government (Senate) did not permit these four questions.

Questions on Values

37 6-pt Likert-scale questions, and

31 forced-choice or open-ended questions on behavioral preferences and actual conduct.

(Most of these 68 questions and portions of the above demographic questions had been used in a prior study of mine, and some of them had [with permission] been taken from a prior cross-cultural study done in 1954-1955 by McClelland et al., 1958) See Appendix II, below for a copy of the questionnaire (English version), and Appendix III for explanatory comments.

The subjects were given approximately 30 minutes to complete the questionnaire.

2. T.A.T.

The "TAT" (thematic apperception test), which we called "picture-story exercises," in which each subject was required to compose eight creative stories, to go along with eight pictures (all from McClelland et al.: four from the original H. Murray series developed at Harvard in the 1940s and four taken by McClelland from the original H. Heckhausen series developed at the Max Planck Institute in Germany in the late 1940s). Four of these were specifically designed to be evaluated for "achievement imagery" (*n*-Ach) and four for "affiliation imagery" (*n*-Aff).

The subjects were given 3 minutes and 50 seconds (exactly) for the writing of each story. A copy of these pictures (English version) will be found in Appendix VI, below.[30]

3. Name Identification and Categorization Task

Name Identification Questionnaire

Here each subject was first given a one-page 4-minute ("base-line") questionnaire, with the request to identify very briefly and quickly 12 "famous names."

Immediately after the collection of the completed questionnaires I spent about three minutes

[30] The scorers were blind as to the subjects' identity. Details as to the McClelland et al. scoring methods applied are given in my prior dissertation (Küsell, 1993/4, pp 84-7 and 234-36). For further and complete details on the scoring systems also see Heyns, Veroff, & Atkinson (1958), Shipley & Veroff (1952), and on a revision of affiliation motivation scoring, see McClelland & Pilon (1983). Affiliation was here scored by both methods described.

before the assembled group, telling them very briefly who these twelve people had been or were.

Categorization Questionnaire

Then a "Name categorization task" questionnaire was handed out, and in three different ways each subject was asked to categorize or group these same twelve names. In one of the tasks explicitly, and in another implicitly, the subject had to place him/herself into one of the groups, and decide with whom to associate.

The whole name identification and categorization tasks took about 20 minutes to administer. A copy of this (English version) will be found in Appendix IV.

4. Three Cognitive Tests

After the completion of the three above tasks in group session, three "cognitive" or "intellective" tests were now individually administered to each subject. These were:

The Picture Completion subtest

of the Wechsler Adult Intelligence Scale-Revised (WAIS-R)

Porteus Mazes

The three most complex of the Porteus Mazes (Vineland Revision) (See Appendix VII, below), a

Portable Rod and Frame ("Field-Dependence/Independence") Test

The "differentiation" or "field-dependence/independence" test of Witkin was administered with use of the Witkin-Oltman "Portable Rod-and-Frame Apparatus."

The administration of these three cognitive tests required approximately a further nine minutes of each subject.

Further Items Added during the Years of Testing

In 1997, and thus for the final 523 subjects, a further questionnaire item (q55) was added to the base questionnaire.

In 1998, and thus for the final 378 subjects, the following were added:

(a) The family profile solicited was expanded to request full details – including exact number of grandparents, and all categories of siblings -- of all who had lived with the subject during the formative years (i.e, the points chosen: at age 1-yr old, 2 yrs old, 5 yrs old, 10 yrs old and 15 yrs old).

(b) Two further questionnaire items (q56 and q57) were added.

"Primary" and "Secondary" Indices Focused upon

The first two items in Table 3-1 (pp. 75-6, above) above, on the childhood side of both generations, deal with family integrity and exposure to fairy tales during childhood.

I-1. On family integrity, the concern is the family constellation at home. Here the primary focus is upon the presence or absence of the biologic parents, but a secondary focus is upon the presence in the home of (a) grandparents, (b) number, gender, etc. of siblings, (c) other relatives, and (d) nonrelatives. These data were gathered from both the i (parental) and the $i + 1$ (pupils') generation – and in the case of the parents both on their children and on themselves.

I-2. The three Q38 questions deal with exposure to fairy tales during childhood.

A word is in order somewhere, on why there is in this study such a focus upon the presence or absence of fairy tales in the early life of the youth. Why are fairy tales (three sets of Q38 questions), deemed important indices?

In addition to many reprints of classical collections of fairy tales in just about all languages of the world, over 3000 books *about* fairy tales have been published during the past two decades in English and German alone. Many of the books written in German have been published in Switzerland. Switzerland is a bastion of Jungian analytic psychology, and a significant fraction of the books on fairy tales have been written by Jungians, to whom the archetypal imagery constitutes a kind of map into the unconscious (von Franz, 1997). However, the importance of fairy tales in the early life of a child has been stressed by many non-Jungian child psychiatrists and psychologists as well, the late Bruno Bettelheim having written a number of books and articles on the subject, stressing that the time of childhood is a time when magic is still real, and messages tied to it, can become deeply engrained for life (Sutton, 1996). Fairy tales have been argued to help strengthen the bonds between the members of a family (Robinson, 1986) and the imagery of fairy tales has been held to give structure to one's entire life (Leonard, 1986; Zimeless, 1993). There are interesting differences of responses to fairy tales by children and adults (Strayer, 1995). The primary focus of most investigators on fairy tales, however, has been upon their value in enculturation (Danilewitz, 1991) and as a teaching device (Flack, 1997).

Fairy tales are, of course, only one of a number of instruments that transmit stories about the past to a child. Others range from straight history and religious writ to myths, sagas, ballads, and legends. Of this array, however, fairy tales have traditionally been the most widely disseminated, and for many centuries. Questions soliciting responses as to childhood involvement with fairy tales were thus considered more likely to be meaningful to most subjects, than a complex array of questions as to other types of stories or literature. To conclude: fairy

tales appeared the most widely known and understood possible marker variable of the array of literary heritage from the past available to children throughout the Western World. Aesop's Fables antedated the modern West, and, indeed, were far older than Aesop, who merely collected most of them, in the same manner as the brothers Grimm did 2,500 years later. In some cultures (as in some American Indian tribes), the child is spellbound by such stories transmitted not by by parents or grandparents, but by a professional tribal "story-teller."

I-3 Parental SES ("socio-economic scale" or class) and I-4 Relocations ("mobile") are both considered predictor variables for subsequent maturity. The argument on relocations is as follows: Whatever makes ties to peers in early upbringing more transitory in comparison with family cohesion will tend to strengthen family bonds and hence later maturity. Moving from one geographical location to another typically keeps the child's family presence intact, but creates a complete change of peers. This argument only applies where the entire family moved as a unit.

II-1, II-2, II-3, II-5, II-6, and II-7 all deal with activities of the child in late childhood or adolescence, when the subject was about 13 to 14 years old, and are obtained from answers to the grid of questions posed in Questionnaire item 45 (below).

II- 4, The "sleep-over" question, gets at a different aspect of family and home "integrity" and is gleaned from Questionnaire item 44 as to the frequency the child had either slept over at a friend's home or had a friend stay overnight.

It should be noted that all these "primary indices" on "later childhood" activities define the *family-* and *reading-centeredness* of the child's life as opposed to time devoted to peers, telephone, and TV.

II-8 and II-9 were considered less germane, although on average, held also to be possible predictors. The schools have been somewhat arbitrarily rated (and in some cases perhaps not fairly), with the following schematic (which admittedly involves judgment calls and is debatable):

Traditional (classical) European Gymnasium..... 4 points

U.S. preparatory schools and all other European Gymnasiums..... 3 points

U.S. (e.g., Catholic) parochial schools & European Gymnasium add-on schools... 2 points

U.S. public schools ..... 1 point

U.S. public school without restrictions (large "remedial" component).....0 points

The number of languages a child has learned may, in many cases, be not so much indicative of competence or desire to learn, as the result of exposure to languages.[31]

Although it had initially been the plan to run separate analyses on early childhood, adolescence, and adulthood-related data, it was finally decided to combine early childhood and adolescence into one rubric ("childhood"), as there were simply insufficient data for *early* childhood to permit robust analyses.

(Young) Adulthood = age 17-20 for the $i + 1$ generation; mean age = 46 for the i generation.

III-1 "Depth/length of relationships." This is solely based on a common sense assumption and gleaned from the answer to only one question (Q-51). The assumption is that the *length* of time a friendship survives is a good index of the *depth* of commitment in that friendship. While clearly the case *when the subject has recently made a significant geographic relocation*, this is not necessarily always the case where one has continued in the same neighborhood or school with the same assortment of peers as possible neighbors, playmates, etc. for many years.

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[31] Sheer immigration of child, parents, or grandparents often adds a language or two. More importantly, the schools in this study were not randomly selected. With some exceptions the schools in Europe were overwhelmingly *Gymnasiums*, i.e., highest calibre academic schools, and the schools in the U.S. were mostly "*Blue Ribbon*" schools – selected and recommended to me by the U.S. Department of Education as "truly outstanding high schools." Most Gymnasiums and Blue Ribbon schools pride themselves in prodding their pupils to acquire a fair proficiency in at least two and at times three to four foreign languages.

III-2 "More relating to elders versus peers" is gleaned primarily from the answer to Q-54, as to whom the young adult would more typically turn to for advice. (Secondarily from Q55, Q57.)

III-3 "Individual and 1-on-1 vs. group activities" is derived from classifying the responses to Q-41 (and secondarily Q-34) as being either "group" activities (football, baseball, choir, attending summer camp, etc.) or "individual or one-on-one" activities (e.g., jogging, chess, piano). The classification is not always clear and straightforward (tennis or ping pong are occasionally played by foursomes, and one could play an individual instrument as part of an ensemble). Truly unclassifiable activities were categorized as "amorphous."

III-4 "Terms of address, reference" is a measure derived from multiple-part Q-42, to determine whether the young adult knows how to *differentiate* between when and with whom to employ formal and when and with whom familiar terms of address, reference, or self-identification.

III-5 "Social distance differentiation" is a measure derived from Q-36 on the amount of privacy one desires (as to one's personal and intimate life).

III-6 Egocentric vs. sociocentric values and

III-7 Materialistic vs. idealistic values are derived, following McClelland et al. (1958), from the reponses to Q40: "What are the three things you would most like your children to learn?"

III-8 "Letters vs. telephone calls" is obtained from Q43 calling for an estimate of the number of letters and telephone calls made to certain categories of people in the past 12 months.

III-9 "Quality-minded vs. easygoing" is simply a choice-answer to Q35.

III-10 "Infantilism in language" is derived from Q37 about differentiation between familiar and formal terms in language, and knowing which is more appropriate in which social setting.

III-11 (This and the following two measures could not be obtained from the *i* generation adults, but only the *i*+ 1 generation) "Maturity of social association" is a measure derived from the Name Categorization Task (Parts II and III), attached hereto in Appendix IV, below. In this the subjects

are implicitly asked to state with whom they would prefer to associate (an action movie hero, great scientists, religious leaders, statesmen, inventors, etc.), out of a possible array of 12 important names. (Immediately prior to the administration of this task, the subjects were, as outlined above, given a brief explanation of who the twelve people are or were. This was done right after the administration of the one-page "Name Identification Task" [first page of Appendix IV, below].)

III-12 "Erudition" or general knowledgeability, was derived from the subject's initial responses to the "Name identification task" (i.e., *before* I gave the group a brief description of the twelve people whose identification the task had called for).

III-13 "Sophistication of categorization" are three scores (Abstract, Lessthan, NetAbstract) derived from a rating of the sophistication of the grouping shown by the subjects in parts I and II of the Name Categorization Task. This again, is a rating which entails a lot of judgement calls. The subject's responses are rated on a three-step scale as being either "less than functional," "functional," or "sophisticated or more-than-functional." Another related score, which is also obtained here (but which will not be emphasized in the analyses, as it proved to have no significant discriminatory power in the study), is merely the *number* of categories (groups) employed by the subject. Both measures were derived from arguments on categorization tasks by the neuropsychologist A. R. Luria, who ascribed great importance to individual differences in such ("prefrontal lobe-involving") competencies.

In all of the above "primary measures" the subjects were asked to report on what they actually *do*, or what their actual practices *are*, or in a few cases, what they think in a given situation they would probably *do*. By contrast the ten following "secondary indices" listed here (III-14 through III-23) ask the subject to express their *opinions, views* or *beliefs*, in each case on a Likert-scale. I consider such responses as to "values" less reliable – at least as to actual conduct.

Finally, only in the case of the $i + 1$ generation, where the TAT task was also administered, items III-24 and III-25 purport to measure, respectively, *n*-Ach, or achievement motivation and *n*-Aff, or affiliation motivation, with application of the scoring methods developed by McClelland et al. (1958, and subsequently revised as to affiliation motivation, McClelland & Pilon, 1983)

Tertiary (Ancillary) Indices

These four measures (cognitive measures, gender, nationality, and religious affiliation of parents) have been labeled "tertiary," because their differential *developmental* impact, especially as such relates to variation in adult maturity, is far from clear.

Cognitive measures are probably not subject to much change as a result of environmental influences over the life cycle of a human being. In some of the statistical runs they have, therefore, been regarded as variables pertaining to childhood. The issue of whether these are indices of styles or of competencies was much debated for decades, but has probably been decisively answered in favor of "competencies" in a series of review articles in the past decade (Kogan & Block, 1991), although of the group, the Portable Rod & Frame Field Dependence/ Independence Test is probably closer to a "style" than other measures of differentiation or field independence (Arthur & Day, 1991). They are all positively correlated with intelligence and are also positively correlated with several other predictors of adult maturity. However, as they probably cannot be related to variations in parenting or enculturation practices, they are not of critical importance to this study. The principal reason I have made them part of the armamentarium of tests is that one might (a) look for interaction effects and should be able to ask (b) is such and such *still* a predictor, *if* one were to hold cognitive competencies constant?

PC, the Picture Completion Subtest of the Wechsler Adult intelligence Scale – Revised (WAIS-R) has been repeatedly found to be (together with the vocabulary subtest) a good surrogate of the entire WAIS-R (Krull, et al., 1995b). It also correlates highly significantly with education and occupational status (Krull, et al., 1995a). As the test also is indicative of vigilance and attention to detail it also correlates positively and highly significantly with the Porteus Mazes Test. The WAIS-R has in recent years been superseded by the WAIS-II, and WAIS-III. To permit comparison with the writer's prior study, however, and as the differences are minor, the WAIS-R picture completion subtest was retained in the present testing sequence.

PMT, the Porteus Mazes Test (see Appendix, below) has, in various forms, been employed for a century now. The most comprehensive review of its construct validity and (then) over half century of history was given by Porteus himself (1967). It is not only related to intelligence and diligence (which latter Porteus termed "a temperamental characteristic") but also the ability to shift between analytic and global approaches (allegedly, a prefrontal lobe characteristic). It has been successfully used as a diagnostic tool to identify attention deficit disorder (Kuehne, et al., 1987), sociopaths, prison normals (Sutker et al., 1972), hyperkinetics (Oommen, et al., 1987) and other special groups and to distinguish such from normals. (Porteus, 1967, discusses it, comparing it favorably to some other measures used by Cora Dubois in her 1937 study on the Alorese.) Partialing out both mental and chronological age, the PMT has been found to correlate significantly with "cognitive-behavioral self-control" (Kendall & Wilcox, 1991). With employment of three Porteus Mazes (vs. four irrelevant tasks), a model's nurturance was found to enhance the imitation of the task-relevant behavior, but not the task-irrelevant behavior (Jaspere & van Hekken, 1971). [32]

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[32] Five years ago I personally found out that the PMT has a strong *memory* component. One of the subjects we tested in northern Germany completed all three mazes without any errors in 29 seconds. That was *twice* as good as the best previous record of the over 1,200 subjects I had at

FDI, the field dependence/independence (or differentiation) task has several forms, which correlate about .4 to .7 with one another. The three principal forms utilized during the past decades are the Witkin-Oltman Portable Rod and Frame Test (created by Philip Oltman of the Educational Testing Service in Princeton about four decades ago), the Embedded Figures Test, and the Group Embedded Figures Test. In each version the subject is asked to attempt to concentrate on some aspect (the figure) and ignore the rest (ground). In the Portable Rod & Frame Test (PRFT) the subject's task is to state when a moving rod surrounded by a moving frame (all other visual cues being blocked out) is in the "true upright" position. The device is a portable successor to the old Ames Distorted Room initially employed by Witkin in the 1940s and 1950s. As the subject's (eight trial) responses recorded are *degrees of deviation from the upright*, the lower the score, the better (i.e., zero, is the best score).

FDI has been found to correlate significantly with locus of control and self-monitoring (Leventhal & Sisco, 1996) and with the PC of the WAIS-R (Clark & Roof, 1988). In general, as noted above, "I," or field independence is related to competence and positively correlated with intelligence (Kogan & Block, 1991; Tinajero & Paramo, 1997). When the PRFT is applied to the elderly, a slow but progressive "destabilization" is noted, that is, scores become less field-independent and more field-dependent. In fact, when this destabilization becomes very notable, it becomes a predictor of death. Thus in a longitudinal follow-up study by Hagberg, et al., 1991, of a group of 67- to 73-year olds, to find predictors of survival to 83 years, the more rapid and pronounced the shift from field independence to field dependence, the earlier the death! As noted

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that time tested in various connections over the past decade (about 70 seconds is the average and then with about four or five errors, and over 95% of the subjects do it in between 50 and 160 seconds). Querying the subject afterward, she explained (and demonstrated!) that she needed only about one second to totally memorize any never-before-seen complex maze, diagram, or table of figures or terms flashed before her; one reason she opined, why she got such good grades and unfortunately also, she lamented, as to why she "tended to be so lazy."

above, there is a curvilinear trend in adolescence: Young children tend to be more field dependent, then in adolescence there is a general slight shift to field independence, which trend then reverses itself again in adulthood (McLeod, 1987).

Gender, nationality, and religious affiliation are similarly treated as "tertiary."

Statistical Procedure

The statistical analysis hereinbelow will be developed in the main as follows: (1) by use of principal component analysis[33], followed by (2) bivariate (Pearson Product-Moment) 2-tailed correlation analysis, and (3) some ancillary statistical analyses.

There are basically two types of analyses or comparisons called for here. One is developmental and the other phenogenotypic (cross-generational). In the developmental sequence we note the correlation between childhood components of a generation with the adulthood data of that generation (where it must be recalled that all data as to a given subject's childhood and adulthood were obtained at the same time, in the same interview and testing sequence). In the genophenotypic or cross-generational comparison, one compares the childhood characteristics of one generation with the childhood characteristics of the other, and similarly, adulthood of one with adulthood of the other. Table 3-2, below (which, unfortunately, had to be spread over two pages) shows the various component analyses generated.

In the following chapter, the results are then presented in the form of a series of statistical analyses, mostly principal component analysis and correlation analysis.

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[33] In each initial analysis, principal components were extracted in several ways. In the end the type used for the analyses herein, employed the procedure of extracting in each analysis a number of components as close to, but above, explaining 50% of the variance as possible. In the set used herein, missing values were (in component, but not correlation, analyses) handled by "listwise" elimination. This is a very conservative procedure, as it in every specific analysis eliminates all subjects on whom *any* response is missing. (Pairwise elimination, which had been my preference, proved mechanically impossible to do here.)

Table 3-2

The four types of PC Analyses made, of which the "Missing values by listwise deletion ... Limit: above 50% of variance" was chosen.

Description of subjects/variables	*n*	Missing values replaced by near median or mean Limit: Eigenvalues of 1		Missing values replaced by near median or mean Limit: Above 50% of variance		Missing values by listwise deletion Limit: Eigenvalues of 1		Missing values by listwise deletion Limit: Above 50% of variance	
CHILDHOOD									
(I) *i* childhood 41 variables[1] restricted to subjects on whom there are Q data on both generations[2]	132	***PC 1***	10 components/ 76% of variance	***PC 46***	4 components/ 55% of variance	***PC 16***	11 components/ 78% of variance	***PC 31***	4 components/ 54% of variance
(II) *i* + 1 childh. 42 variables restricted to the subjects interviewed after September 1998 ("final third")	378	***PC 2***	11 components/ 74% of variance	***PC 47***	4 components/ 50% of variance	***PC 17***	11 components/ 75% of variance	***PC 32***	4 components/ 51% of variance
(III) *i* + 1 childh. 42 variables restricted to subjects on whom there are Q data on both generations	132	***PC 3***	11 components/ 78% of variance	***PC 48***	4 components/ 54% of variance	***PC 18***	11 components/ 78% of variance	***PC 33***	4 components/ 53% of variance
(IV) *i* + 1 childh. 37 variables[3] all *i* + 1 subjects; excluding the three "cognitive measures" & "kindval"	1158	***PC 4***	12 components/ 72% of variance	***PC 49***	6 components/ 53% of variance	***PC 19***	12 components/ 71% of variance	***PC 34***	6 components/ 52% of variance
(V) *i* + 1 childh. 41 variables including the three cognitive measures & "kindval"	1158	***PC 5***	12 components/ 67% of variance	***PC 50***	7 components/ 53% of variance	***PC 20***	13 components/ 71% of variance	***PC 35***	7 components/ 52% of variance
ADULTHOOD/YOUNG ADULTHOOD									
(VI) *i* adulthood 60 variables restricted to subjects on whom there are Q data on both generations[2]	132	***PC 6***	21 components/ 74% of variance	***PC 51***	11 components/ 53% of variance	***PC 21***	21 components/ 74% of variance	***PC 36***	11 components/ 53% of variance
(VII) *i* + 1 adulth. 60 variables restricted to the subjects interviewed after September 1998 ("final third")	378	***PC 7***	22 components/ 66% of variance	***PC 52***	14 components/ 51% of variance	***PC 22***	22 components/ 66% of variance	***PC 37***	14 components/ 51% of variance

[1] AQ45BB (using computers in childhood) had to be left out, as it showed no variance in the *i* generation.
[2] For the 46 (out of 132) subjects on whom there existed *two* complete parental questionnaires, the responses of the two parents were averaged.
[3] The 10 grandpaternal and grandmaternal variables [of Analysis Categories (I), (II), & (III)] are here reduced to 5 grandparental variables.

Table 3-2 continued

The four types of PC Analyses made --- continued

Description of subjects/variables	*n*	Missing values replaced by near median or mean Limit: Eigenvalues of 1		Limit: Above 50% of variance		Missing values by listwise deletion Limit: Eigenvalues of 1		Limit: Above 50% of variance	
ADULTHOOD/YOUNG ADULTHOOD									
(VIII) *i* + 1 adulth. 60 variables restricted to subjects on whom there are Q data on both generations	132	***PC 8***	23 components/ 75% of variance	***PC 53***	12 components/ 52% of variance	***PC 23***	23 components/ 75% of variance	***PC 38***	12 components/ 52% of variance
(IX) *i* + 1 adulth. 60 variables sole purpose is to show how items Q 55, 56, & 57 relate to rest	1158/ 378	***PC 9***	19 components/ 56% of variance	***PC 54***	16 components/ 51% of variance	***PC 24***	22 components/ 66% of variance	***PC 39***	14 components/ 51% of variance
(X) *i* + 1 adulth. 57 variables excluding the three variables w. many missing items: Q55, Q56, & Q57	1158	***PC 10***	18 components/ 57% of variance	***PC 55***	15 components/ 51% of variance	***PC 25***	19 components/ 59% of variance	***PC 40***	15 components/ 51% of variance
(XI) *i* + 1 adulth. 63 variables also including the 6 variables from identification/categorization tasks	1158	***PC 11***	21 components/ 59% of variance	***PC 56***	16 components/ 51% of variance	***PC 26***	21 components/ 60% of variance	***PC 41***	16 components/ 51% of variance
(XII) merely duplicate test runs on the category (XI) analyses --- not meant to be used									
(XIII) *i* + 1 adulth. 66 variables includes 3 motivation scores & subjects tested since Oct. 1995 ("final 2/3")[4]	791	***PC 13***	23 components/ 62% of variance	***PC 58***	16 components/ 51% of variance	***PC 28***	23 components/ 63% of variance	***PC 43***	16 components/ 51% of variance
(XIV) *i* + 1 adulth. 67 variables like (XIII), exc. also incl. Q55 & thus *n* reduced from 791 to 523	523	***PC 14***	24 components/ 65% of variance	***PC 59***	15 components/ 50% of variance	***PC 29***	24 components/ 65% of variance	***PC 44***	15 components 50% of variance
(XV) *i* + 1 adulth. 69 variables all 69 *i* + 1 adulth. variables & thus *n* reduced further to 378	378	***PC 15***	25 components/ 67% of variance	***PC 60***	15 components/ 50% of variance	***PC 30***	25 components/ 67% of variance	***PC 45***	15 components 50% of variance

[4] These are the 791 subjects ("final two-thirds") on whom the three "motivation" scores were also obtained (from "T.A.T." tests).

As the complete armamentarium contained (most) items which were administered to all subjects, but also (some) variables on which the responses of only some subjects were obtained, the findings are necessarily presented in several forms. Some analyses focus upon additional variables, others substitute an alternative data set (adding some variables and removing others), and still others split the subject pool to permit focus upon the effects of varying childhood rearing and conduct patterns; as, for instance, whether some such patterns are associated with a greater resemblance between offspring and parents.

In addition to these main (principal component and correlation) analyses, some ancillary analyses were undertaken, to determine the extent of intergenerational change and stability, but also to ascertain whether any evidence emerged as to the effect of the number of siblings present during childhood years and/or the importance of being an eldest or only child (Schachter affiliation and Zajonc "confluence" theories, or the "maturity hypothesis" of this author).

Those variables involving questions as to the demographics or the activities and experiences of the subjects primarily associated with, or established during, *the first 15 years of the subjects' lives*, were categorized as childhood indices and those relating to their *current* views and activities as adulthood variables. Thus an item like Q44 (the "sleepover" question),

> "When you were about thirteen/fourteen years old, about how many times a year did you sleep over at a friend's place (instead of at home) or have a friend stay overnight at your home? (More than 20 times a year, only two or three times, never, etc.) _____"

is a question designed to obtain childhood data. Similarly for the three (Q38) questions on fairy tales in early and later childhood and the seven (Q45) questions on what percentage of each day the subject typically spent doing what, when "about thirteen/fourteen years old." Demographic questions on place of birth, parental SES, quality of schooling, and on who had lived at the

subject's home when the subject had been "1 year old," "2 years old," "5 years old," etc. were also designed to elicit childhood data.

Most of the Q items are adulthood questions, that is, relate to the subject's current values or behavior. The "name-id" and categorization task items, test for the subject's current level of abstraction, maturity, and knowledgeability, and are thus considered indices of adulthood. The same is true for the "motivation scores" derived from the T.A.T. "picture-story completion test" and designed to be indices of achievement and affiliation motivation (following McClelland, et al., 1958, and earlier work by Henry Murray and others at Harvard University and of Heinz Heckhausen and his associates at the Max Planck Institute in Bavaria, Germany).

The three "cognitive" tests posed a problem of classification. It could be argued that they measure the subject's intellective or cognitive competencies at the time of testing, and should thus be considered "adulthood" indices of the $i + 1$ generation. However, all the evidence of decades of research into intelligence and cognitive competencies, with the Wechsler (I.Q. test – of which the "PC" or picture completion subtest is a part), and such tests as the ability to navigate mazes (Porteus Mazes) and the field differentiation competence (Portable Rod & Frame) of subjects, points to a remarkable permanence of such competencies over the lifetime of the individual. All three indices might therefore be held to measure, to a major extent, the cognitive competence with which the individual was *endowed from birth or early childhood onward.* They were thus classified as "childhood indices" (although admittedly subject to some lifetime shift).

Reducing the Number of Variables: Elimination, Consolidation, and Selection

A number of sequential procedures was employed to reduce the over 200 variables. First of all, a number of variables were simply not employed in the final analyses because there were

too many missing items or because they proved germane for less than 5% of the respondents. This, applied to questions on religious affiliation and the presence of step or foster parents.

Prior investigations (McClelland et al., 1958, Kűsell, 1993) had shown a number of the Q-items to form clusters or "hang closely together." Thus (following McClelland et al., 1958) items Q2, Q4, Q13, and Q46 were consolidated into one "A-items" ("rational striving") score; items Q7, Q9, Q15, and Q24 into one "B-items" ("'c'est la vie,' resignation, cynicism") score, and items Q1, Q3, Q17, and Q30 into one "C-items" ("concern for decency, idealism") score. However, these "clusters" of the 1950s have not entirely been preserved into the 1990s. The individual Q-items were thus also retained for the final component analyses herein.

In a number of other cases consolidation was applied to responses to the various parts of a question, when preliminary analysis showed no differentiation in the reponse pattern. Thus the five responses to Q42 were reduced to two items (QABD and QCE) (grouping responses to parts a, b, and d into one, and responses to parts c and e into the other). Similarly, the three reponses to the three Q37 items were consolidated into one index and the four to the four parts of Q39 also.

After all this, however, there were still 55 adulthood and almost 100 childhood (the lattter mostly demographic) variables on hand for the $i + 1$ generation. (As the respondents of the i or parental generation were limited to one questionnaire, the need to reduce the number of variables was less acute. Nevertheless, on the identical or analogous items, consolidation of responses similar to that of the $i + 1$ generation was carried out to achieve comparability.) The demographic childhood variables were then further reduced in all cases of little variability in different ways in the various statistical analyses performed. Thus, for instance, in most (but not all) analyses, the five scores for paternal presence (at ages 1, 2, 5, 10, and 15) were reduced to one consolidated number, and similarly for maternal presence, grandpaternal and grandmaternal presence, total

number of siblings, total number of other relatives, and total number of nonrelatives living at the subject's home at the various age levels.

Finally, in deciding what data to use in any one analysis, especially in the case of the $i + 1$ generation, the data set could occasionally be reduced by selecting one sub-set rather than another of alternative recordings of the data. Thus, there was, for instance the choice of selecting the exact number of grandpaternal and grandmaternal presence at specified ages, or simply "either grandparent" at such age levels, or even more simply 'aggregate total grandparental presence at all ages.' Similarly, in lieu of exact number of different categories of siblings (e.g., elder full brothers, elder full sisters, younger full brothers ... elder step or foster brothers, etc.) one could select the variable indicating the presence in the home of "any sib" at each of the specified age levels, or else the variable "totalsib" aggregating all siblings of all kinds and over all time periods specified.

In the "base" or "comparison case" this ultimately reduced the number of variables employed in the final analyses (for the $i + 1$ generation) to 25 for childhood and 47 for adulthood.

As a final step of data reduction, Principal Component Analysis was performed, separately for the two generations, and in each case separately for the childhood and adulthood data pools. This generated four sets of results, as shown below.

Correlation Analyses

Here it proved necessary to employ *pairwise* deletion for missing values. A significance level was set for all analyses of $\alpha = .05$, in each run adjusted by modified (sequential) Bonferroni. All were done with a Pearson 2-tailed, bivariate correlation command in SPSS-10. Only the salient (significant) correlations are shown here. A complete set of all computer print-outs of these correlation analyses, with full details, is available, upon request.

Several categories of correlation analyses seemed called for. One category is from a developmental perspective; as, how the childhood components of one cohort (e.g., that of the *i* generation) correlate with the adulthood components of the same correlation. These "developmental" analyses (Tables 4-29 to 4-32) follow the Principal Component Analyses below.

Another perspective from which correlation analyses between sets of components may be made herein, is not developmental, but cross-generational (or "phenogenotypic"). Here one compares the childhood pattern of responses of one generation with the childhood pattern of the other, the adulthood responses of one generation with those of the other, or the adulthood responses of the *i* generation with the childhood pattern of the $i + 1$ generation. These cross-generational or phenogenotypic correlations then follow (Tables 4-33 to 4-37).

The then following two correlation analyses (Tables 4-38 and 4-39) are designed to shed light on a quite different question, namely, the extent to which the two $i + 1$ generation subsamples of $n = 132$ resemble the overall sample of $N = 1158$ from which they are drawn.

Other Analyses

The question was posed, whether those youths with a more "traditional" or "parwrit" upbringing, as exemplified by (a) more parental presence in the home, (b) reading and more engagement by fairy tales (i.e., where parental/grdparental reading of fairy tales led to the child's own reading of such), and (c) less "peertel" involvement in sleepovers, TV, telephone, etc. would tend to resemble their parents more, whereas those with a contrary background would tend to resemble their parents less (in accordance with the hypotheses advanced herein).

In an attempt to answer this, using the paired sample statistics as a base, the subsamples of 132 childhood and adulthood responses were divided ("split") into three thirds (of $n = 44$ each), those highest, those intermediate, and those lowest on the composite index parwrit vs.

peertel derived from the large $i + 1$ data base. Counting in every case only correlations (as index of similarity or concordance) and differences (as index of divergence) of significance equal to an $\alpha = .05$, with modified, sequential Bonferoni adjustment (effectively giving a $p = .000$ or 001 in most cases), the pattern depicted in Table 4-40-A was obtained. This is then in the following pages followed by a by a traditional multivariate analysis (Table 4-41-A), on the same question, again with "split" as the divider – but here utilizing the components (PC 31 and PC33 for the comparison of childhood data and PC36 and PC38 for the sets or adulthood data), rather than a composite of individual indices.

The contrary question was then posed, as to what pattern of similarities and differences between the two generations would emerge, if instead of basing the analysis on the parwrit vs. peertel differences of the $i + 1$ generation, one would base the split into such three "thirds" on the relative parwrit versus peertel differences of the *parental* (i) responses (involving a much smaller subset of the parental $n = 132$ subjects). The results of this analysis are depicted in Table 4-41-B, below. The GLM MANOVA analyses may be found in Appendix XI, below.

LEGEND OF PRINCIPAL "CHILDHOOD" VARIABLES

"KINDVAL" = a rating of school calibre (on a 4-step scale from 4 = highest to 0 = lowest)
MOBILE (MOB) = extent of geographical relocation since birth (5-step, from 0 least to 5 most)
RURURB = rural vs. urban site of birth (4-categories: 1 = largest cities to 4 = most rural)\
TOTAL = total number of languages spoken by the subject and/or in the subject's home
HIGHER (HIGHEST) = SES, the higher of the two parental scores
FA01 = Father present in subject's home, when subject was 1 year old, etc.
MO01 = Mother present in subject's home, when subject was 1 year old , etc.
GRDFA01 = Grandpaternal presence in subject's home, when subject was 1 year old, etc.
GRDMO01 = Grandmaternal presence in subject's home, when subject was 1 year old, etc.
EITHER01 = At least one grandparent in subject's home, when subject was 1 year old, etc.
TOTSIB = total number of siblings in subject's home when .... etc. (or aggregate, all ages)
ANYSIB = Any sibling in the subject's home when subject was ... etc.
ELDON = Was subject the eldest or only child?
TOTOTH = Total number of all others living in the same home with subject ... etc.

NB: In the parental (i) generation, the letter "A" always precedes the variable name.

CHAPTER 4

RESULTS

Principal Component Analysis

PC 31 -- *i* childhood – 41 variables – $n = 132$

4 components – 54% of variance

Restricted to subjects on whom there are Q-data on both generations

Table 4-1

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Comp.	Total	% of Var.	Cumulative %	Total	% of Var.	Cumulative %
1	9.689	23.631	23.631	9.689	23.631	23.631
2	5.458	13.313	36.943	5.458	13.313	36.943
3	4.302	10.492	47.436	4.302	10.492	47.436
4	2.537	6.189	53.624	2.537	6.189	53.624
5	2.001	4.880	58.505			
6	1.810	4.414	62.919			
7	1.448	3.531	66.449			
8	1.330	3.244	69.694			
9	1.288	3.140	72.834			
10	1.153	2.811	75.646			
11	1.047	2.553	78.199			
12	.936	2.282	80.481			
13	.909	2.216	82.697			
14	.831	2.028	84.725			
15	.725	1.767	86.493			
16	.656	1.601	88.094			
17	.624	1.523	89.616			
18	.566	1.379	90.996			
19	.527	1.285	92.281			
20	.461	1.124	93.405			
21	.433	1.055	94.460			
22	.368	.898	95.358			
23	.356	.869	96.227			
24	.278	.679	96.906			
25	.235	.572	97.478			
26	.190	.464	97.942			
27	.161	.393	98.335			
28	.135	.329	98.664			
29	.124	.303	98.966			
30	7.359E-02		.179	99.146		
31	6.010E-02		.147	99.292		
32	5.847E-02		.143	99.435		
33	4.760E-02		.116	99.551		
34	4.235E-02		.103	99.654		
35	3.420E-02		8.342E-02		99.738	
36	2.810E-02		6.853E-02		99.806	
37	2.307E-02		5.627E-02		99.863	

38	2.019E-02	4.924E-02	99.912
39	1.835E-02	4.476E-02	99.957
40	1.326E-02	3.235E-02	99.989
41	4.517E-03	1.102E-02	100.000

Extraction Method: Principal Component Analysis.

N.B.: In all tables below, variance explained will only be shown to a level of eigenvalues = 1.000

Table 4-2

PC 31 Component Matrix

	Component			
	1	2	3	4
AMOBBP (aver. mob of both parents, if p1 & p2)			.173	**.440**
ARURBP (aver. ruralurban both parents, if ...)	.222		**-.404**	
ATOTALBP (aver. total languages both parents if ...)	-.200	-.152	**.298**	**.527**
AHIGHERB (av. higher prof. of parents' parents if ...)	**-.317**	-.225	.198	**.401**
AFA01BP (av. pat. pres. in both parents' homes at 1 if)	-.163	**.729**		.221
AFA02BP (av. pat. pres. in both parents' homes at 2)	-.130	**.850**		.170
AFA05BP (av. pat. pres. in both parents' homes at 5)		**.628**	.104	-.327
AFA10BP (av. pat. pres. in both parents' homes at 10)		**.617**		-.486
AFA15BP (av. pat. pres. in both parents' homes at 15)	.118	.465		**-.643**
AMO01BP (av. mat. pres. in both parents' homes at 1)	-.272	**.536**		.275
AMO02BP (av. mat. pres. in both parents' homes at 2)	-.161	**.849**		.180
AMO05BP (av. mat. pres. in both parents' homes at 5)	-.122	**.869**		.322
AMO10BP (av. mat. pres. in both par's' homes at 10)	-.146	**.821**		.314
AMO15BP (av. mat. pres. in both par's' homes at 15)		**.648**	.117	.187
AGRFA01B (av. grdpat. pres. in both par's h's at 1)	**.873**		.278	
AGRFA02B (av. grdpat. pres. in both par's h's at 2)	**.882**		.314	
AGRFA05B (av. grdpat. pres. in both par's h's at 5)	**.890**		.228	
AGRFA10B (av. grdpat. pres. in both par's h's at 10)	**.875**		.226	
AGRFA15B (av. grdpat. pres. in both par's h's at 15)	**.836**		.159	
AGRMO01B (av. grdmat. pres. in both par's h's at 1)	**.877**		.280	
AGRMO02B (av. grdmat. pres. in both par's h's at 2)	**.882**		.267	
AGRMO05B (av. grdmat. pres. in both par's h's at 5)	**.889**		.299	
AGRMO10B (av. grdmat. pres. in both par's h's at 10)	**.880**		.305	
AGRMO15B (av. grdmat. pres. in both par's h's at 15)	**.858**		.286	
ATOTSI01 (av. total sibs in homes of both par's at 1)	.384	.112	**-.816**	
ATOTSI02 (av. total sibs in homes of both par's at 2)	.474		**-.816**	.103
ATOTSI05 (av. total sibs in homes of both par's at 5)	**.541**		**-.794**	
ATOTSI10 (av. total sibs in homes of both par's at 10)	**.617**		**-.678**	.103
ATOTSI15 (av. total sibs in homes of both par's at 15)	**.678**		**-.564**	.106
AELDON (eldest/only child average both parents if ...)	-.213	-.101	.463	
ATOTOTH (av. total all others at all age levels b par's)			-.284	
AQ38ABB (av. both par's fairy tales heard from p's)				**.274**
AQ38CDB (av. both par's fairy tales read on own)	-.142	-.148		**.361**
AQ38EFB (av. both par's fairy t. seen as movies)				.119
AQ44B (av. both parents sleepovers at par's' homes)			-.242	.134
AQ45AB (av. both par's – time spent looking at TV)				-.151
AQ45CB (av. both par's – time on homework/stud.)				.154

AQ45DB (av. both par's – time being at home)	.108	-.131		.220
AQ45EB (av. both par's – time being on telephone)		.194	.247	-.108
AQ45FB (av. both par's – time spent with friends)	-.127		.105	-.111
AQ45GB (av. both par's – time spent reading)	.129	**-.308**	.151	**.538**

Extraction Method: Principal Component Analysis
4 components extracted

PC 32 – *i* + 1 childhood – 42 variables – *n* = 378

4 components – 51% of variance

Restricted to the ("final third" of) subjects interviewed after September 1998

Table 4-3

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Comp.	Total	% of Var.	Cumulative %	Total	% of Var.	Cumulative %
1	9.362	22,290	22,290	9.362	22.290	22,290
2	5.506	13.109	35.399	5.506	13.109	35.399
3	4.171	9.931	45.330	4.171	9.931	45.330
4	2.223	5.293	50.623	2.223	5.293	50.623
5	2.036	4.848	55.471			
6	1.814	4.310	59.790			
7	1.602	3.815	63.605			
8	1.291	3.073	66.678			
9	1.258	2.994	69.672			
10	1.116	2.658	72.339			
11	1.060	2.524	74.855			

Table 4-4

PC 32 Component Matrix

	Component			
HIGHEST (higher profession of 2 parents SES)	-.153	**.295**	.213	
FATH01 (paternal pres. in subject's home at age 1)	-.103	.490	.493	-.261
FATH02 (paternal pres. in subject's home at age 2)	-.116	**.537**	**.603**	-.170
FATH05 (paternal pres. in subject's home at 5)		.469	**.694**	-.331
FATH10 (paternal pres. in subject's home at age 10)		.451	**.625**	-.422
FATH15 (paternal pres. in subject's home at age 15)		.416	**.588**	-.447
MOTH01 (maternal pres. in subject's home at age 1)	-.243	**.684**		.231
MOTH02 (maternal pres. in both parents' homes at 2)	-.240	**.702**	.143	.428
MOTH05 (maternal pres. in both parents' homes at 5)	-.250	**.645**	.224	**.532**
MOTH10 (maternal pres. in both parents' homes at 10)	-.258	**.586**	.281	**.544**
MOTH15 (maternal pres. in both parents' homes at 15)	-.159	**.506**	.145	.449
GRDFA01 (grdpaternal. pres. in subject's home at 1)	**.914**	.183		
GRDFA02 (grdpaternal. pres. in subject's home at 2)	**.933**	.175		
GRDFA05 (grdpaternal. pres. in subject's home at 5)	**.944**	.149		
GRDFA10 (grdpaternal. pres. in subject's home at 10)	**.900**	.232		
GRDFA15 (grdpaternal. pres. in subject's home at 15)	**.884**	.209		
GRDMO01 (grdmaternal pres. in subject's home at 1)	**.914**	.210		
GRDMO02 (grdmaternal pres. in subject's home at 2)	**.931**	.195	-.111	
GRDMO05 (grdmaternal pres. in subject's home at 5)	**.935**	.190	-.110	
GRDMO10 (grdmaternal pres. in subject's home at 10)	**.942**	.196		
GRDMO15 (grdmaternal pres. in subject's home at 15)	**.928**	.182		
TOTSIB01 (total # sibs in sub's home at 1)	.160	**-.568**	**.592**	.312
TOTSBI02 (total # sibs in sub's home at 2)	.205	**-.618**	**.591**	.265
TOTSIB05 (total # sibs in sub's home at 5)	.313	**-.628**	**.585**	.179
TOTSIB10 (total # sibs in sub's home at 10)	.358	**-.628**	**.517**	.104
TOTSIB15 (total # sibs in sub's home at 15)	.354	**-.525**	.474	
ELDONLY (eldest or only child)	-.139	.311	**-.519**	-.261
ATOTOTH (total all oth. relatives & nonrel's at home)		-.169	-.206	.184
Q38AB (fairy tales heard from parents or grdparents)	-.130		-.129	-.144
Q38CD (fairy tales read on own)				-.203
Q38EF (fairy tales seen as movies/videos)				
Q44 (# of annual sleepovers)			-.154	.227
Q45A (% time spent looking at TV)				
Q45B (% time -- being at the computer)				
Q45C (% time on homework/stud.)			.147	-.215
Q45D (% time being at home)			.104	
Q45E (% time being on telephone)			-.101	
Q45F (% time spent with friends)			-.141	
Q45G (% time spent reading)				**-.288**

Extraction method: Principal component analysis.
4 components extracted.

PC 33 – i + 1 childhood – 42 variables – n = 132

4 components – 53% of variance

Restricted to subjects on whom there are Q-data on both generations

Table 4-5

Total Variance Explained

Component	Initial Eigenvalues Total	% of Var.	Cumulative	Extraction Sums of Squared Loadings Total	% of Variance	Cumulative %
1	9.365	22.297	22.297	9.365	22.297	22.297
2	5.979	14.235	36.532	5.979	14.235	36.532
3	4.623	11.006	47.538	4.623	11.006	47.538
4	2.462	5.863	53.402	2.462	5.863	53.402
5	1.988	4.733	58.135			
6	1.941	4.621	62.756			
7	1.585	3.775	66.531			
8	1.343	3.197	69.728			
9	1.294	3.082	72.810			
10	1.143	2.721	75.531			
11	1.058	2.519	78.049			
12	.987	2.350	80.399			
13	.886	2.110	82.510			
14	.806	1.920	80.430			
15	.748	1.780	86.210			
16	.626	1.490	87.699			
17	.619	1.475	89.174			
18	.583	1.389	90.563			
19	.512	1.220	91.783			
20	.502	1.196	92.979			
21	.472	1.123	94.102			

Extraction Method: Principal Component Analysis.
4 components extracted

Table 4-6

PC 33 Component Matrix

	Component			
	1	2	3	4
MOBILE (geographical mobility/relocation since birth)		.116		
RURURB (ruralurban location at birth)	.320	-.250	.200	.193
TOTALLAN (total languages both parents if ...)	-.166	.269	-.150	
HIGHEST (higher profession of 2 parents SES)	-.176	.286	.277	
FATH01 (paternal pres. in subject's home at age 1)		.167	.672	-.312
FATH02 (paternal pres. in subject's home at age 2)		.255	.774	-.110
FATH05 (paternal pres. in subject's home at 5)		.195	.827	-.270
FATH10 (paternal pres. in subject's home at age 10)		.175	.826	-.313
FATH15 (paternal pres. in subject's home at age 15)		.125	.877	-.355
MOTH01 (maternal pres. in subject's home at age 1)		.704	.115	
MOTH02 (maternal pres. in both parents' homes at 2)	-.122	.695	.301	.508
MOTH05 (maternal pres. in both parents' homes at 5)	-.122	.695	.301	.508
MOTH10 (maternal pres. in both parents' homes at 10)	-.128	.604	.367	.535
MOTH15 (maternal pres. in both parents' homes at 15)	-.114	.567	.318	.450
GRDFA01 (grdpaternal. pres. in subject's home at 1)	.920	.146		
GRDFA02 (grdpaternal. pres. in subject's home at 2)	.930	.137		
GRDFA05 (grdpaternal. pres. in subject's home at 5)	.973	.111		
GRDFA10 (grdpaternal. pres. in subject's home at 10)	.921	.128		
GRDFA15 (grdpaternal. pres. in subject's home at 15)	.922	.112		
GRDMO01 (grdmaternal pres. in subject's home at 1)	.948	.148		
GRDMO02 (grdmaternal pres. in subject's home at 2)	.958	.139		
GRDMO05 (grdmaternal pres. in subject's home at 5)	.959	.130		
GRDMO10 (grdmaternal pres. in subject's home at 10)	.964	.122		
GRDMO15 (grdmaternal pres. in subject's home at 15)	.939	.124		
TOTSIB01 (total # sibs in sub's home at 1)		-.746	.403	.284
TOTSBI02 (total # sibs in sub's home at 2)	.113	-.811	.321	.310
TOTSIB05 (total # sibs in sub's home at 5)	.196	-.804	.324	.325
TOTSIB10 (total # sibs in sub's home at 10)	.244	-.815	.316	.249
TOTSIB15 (total # sibs in sub's home at 15)	.238	-.598	.391	.299
ELDONLY (eldest or only child)		.480	-.404	-.140
ATOTOTH (total relatives & nonrel's at home all ages)		-.112	-.220	.287
Q38AB (fairy tales heard from parents or grdparents)	-.117	.179		.245
Q38CD (fairy tales read on own)		.158		
Q38EF (fairy tales seen as movies/videos)	-.107		-.117	.241
Q44 (# of annual sleepovers)				.354
Q45A (% time spent looking at TV)			-.220	
Q45B (% time -- being at the computer)		.139	-.101	
Q45C (% time on homework/stud.)		-.101	.157	-.200
Q45D (% time being at home)			.149	-.211
Q45E (% time being on telephone)				
Q45F (% time spent with friends)		.122	-.212	.156
Q45G (% time spent reading)				-.296

Extraction Method: Principal Component Analysis
a 4 components extracted

PC 34 – *i* + 1 childhood – 37 variables – *N* = 1158

(reduced through listwise deletion for missing items to *N* = 1047)

6 components – 52% of variance

Excluding the three cognitive measures & "kindval."

Table 4-7

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative %
1	5.609	15.160	15.160	5.609	15.160	15,160
2	4.281	11.572	26.731	4.281	11.572	26.731
3	3.462	9.357	36.088	3.462	9.357	36.088
4	2.429	6.565	42.653	2.429	6.565	42.653
5	1.947	5/261	47.915	1.947	5.261	47.915
6	1.686	4.557	52.472	1.686	4.557	52.472
7	1.414	3.822	56.294			
8	1.267	3.424	59.717			
9	1.144	3.092	62.809			
10	1.096	2.963	65.772			
11	1.059	2.862	68.634			
12	1.009	2.728	71.361			

Extraction Method: Principal Component Analysis.
6 components extracted

Table 4-8

PC 34 Component Matrix

	Component					
	1	2	3	4	5	6
MOBILE (mobile/amount of geographical reloc.)					.247	
RURURB rururb = size of town of birth (urban vs. rural)	.190	.132	.127			-.176
TOTALLAN total number of languages	.184	-.190		-.230	.456	
HIGHEST highest	.266	-.115			.225	.124
FATH01 father present at age of 1	.644		.279	-.239	-.183	
FATH02 father present at age of 2	.689	-.105	.302	-.268	-.222	
FATH05 father present at age of 5	.707		.275	-.419	-.213	
FATH10 father present at age of 10	.649		.252	-.481	-.216	
FATH15 father present at age of 15	.589		.221	-.466	-.229	
MOTH01 mother present at age of 1	.398	-.142	.428	.413		
MOTH02 mother present at age of 2	.485	-.190	.468	.464		
MOTH05 mother present at age of 5	.507	-.208	.448	.520	.101	
MOTH10 mother present at age of 10	.495	-.229	.451	.506	.121	
MOTH15 mother present at age of 15	.347	-.154	.354	.398	.153	
EITHER01 either grandparent present at age 1	-.248	.686	.467			
EITHER02 either grandparent present at age 2	-.262	.723	.494			
EITHER05 either grandparent present at age 5	-.240	.751	.488			
EITHER10 either grandparent present at age 10	-.208	.734	.471			
EITHER15 either grandparent present at age 15	-.206	.697	.422			
ANYSIB01 any sibling in the home at age 1	.530	.477	-.452	.147	.106	-.143
ANYSIB02 any sibling in the home at age 2	.578	.485	-.437	.148		
ANYSIB05 any sibling in the home at age 5	.624	.491	-.367	.101		
ANYSIB10 any sibling in the home at age 10	.583	.483	-.389			.130
ANYSIB15 any sibling in the home at age 15	.517	.440	-.351			.151
ELDONLY eldest or only child	-.530	-.477	.452	-.147	-.106	.143
TOTOTH total of all relatives and nonrelatives in home at all five age levels	-.204	.174		.206	.152	
Q38AB (# fairy tales told by parent/grdparent)					.332	.613
Q38CD (# fairy tales read by self a few yrs later)				-.129	.430	.602
Q38EF (# fairy tales seen as films or video)				.213	-.130	.374
Q44 (sleepovers)				.294	-.279	.436
Q45A (amount of time spent w. TV or movies)	-.132			.262	-.312	
Q45B (amount of time spent at computer)					-.305	
Q45C (amount of time on homework/studying)				-.154	.345	
Q45D (amount of time being at home)			.105		.396	-.398
Q45E (amount of time on the telephone)	-.197	.104	-.115	.273	-.243	.280
Q45F (amount of time with friends)					-.269	.416
Q45G (amount of time devoted to reading)				-.247	.532	.174

Extraction Method: Principal Component Analysis.
6 components extracted.

PC 35 -- i + 1 childhood -- 41 variables -- N = 1158

(reduced through listwise deletion for missing items to N = 1014

7 components – 52% of variance

Including the three cognitive measures and "kindval."

Table 4-9

Total Variance Explained

	Initial Eigenvalues			Ext. Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	5.679	13.852	13.852	5.679	13.852	13.852
2	4.383	10.691	24.543	4.383	10.691	24.543
3	3.458	8.434	32.976	3.458	8.434	32.976
4	2.576	6.282	39.258	2.576	6.282	39.258
5	2.084	5.083	44.341	2.084	5.083	44.341
6	1.720	4.194	48.535	1.720	4.194	48.535
7	1.552	3.786	52.321	1.552	3.786	52.321
8	1.431	3.490	55.811			
9	1.193	2.910	58.720			
10	1.132	2.762	61.482			
11	1.081	2.636	64.118			
12	1.035	2.524	66.643			
13	1.016	2.478	69.121			

Extraction Method: Principal Component Analysis.
7 components extracted

Table 4-10

PC 35
Component Matrix

	Component						
	1	2	3	4	5	6	7
KINDVAL (school calibre)	.294	-.268	.180	-.419	.451	-.101	-.285
MOBILE mobile					.224	.127	
RURURB rururb = size of town of birth	.177	.156	.112			-.148	
TOTALLAN total number of languages	.227	-.244		-.414	.498		-.100
HIGHEST highest	.268	-.127		-.126	.242	.134	-.151
FATH01 father present at age of 1	.644		.253	-.111	-.328		
FATH02 father present at age of 2	.695		.274	-.118	-.359		
FATH05 father present at age of 5	.709		.267	-.260	-.381		
FATH10 father present at age of 10	.653		.246	-.319	-.397		
FATH15 father present at age of 15	.603		.226	-.304	-.385		
MOTH01 mother present at age of 1	.378	-.137	.389	.409	.132		
MOTH02 mother present at age of 2	.474	-.187	.429	.467	.169		
MOTH05 mother present at age of 5	.499	-.207	.407	.512	.235		
MOTH10 mother present at age of 10	.492	-.230	.414	.489	.260		
MOTH15 mother present at age of 15	.364	-.165	.355	.383	.295		
EITHER01 either grandpar. present at age 1	-.250	.655	.496	-.100			
EITHER02 either grandpar. present at age 2	-.264	.692	.524				
EITHER05 either grandpar. present at age 5	-.237	.728	.517				
EITHER10 either grandp. present at age 10	-.203	.708	.504				
EITHER15 either grandp. present at age 15	-.190	.667	.468				
ANYSIB01 any sibling in the home at age 1	.517	.498	-.443		.185	-.147	
ANYSIB02 any sibling in the home at age 2	.559	.512	-.429		.147		
ANYSIB05 any sibling in the home at age 5	.602	.526	-.356				
ANYSIB10 any sib. in the home at age 10	.560	.517	-.379			.139	
ANYSIB15 any sib. in the home at age 15	.506	.464	-.326			.152	
ELDONLY eldest or only child	-.517	-.498	.443		-.185	.147	
TOTOTH total of all relatives and nonrelatives in home at all five age levels	-.218	.183		.183	.160		.121
Q38AB (fairy tales told/read by parent...)		-.109		-.135	.131	.644	.166
Q38CD (read fairy tales by yourself later)				-.206	.175	.656	.243
Q38EF (seen films on fairy tales)				.278	-.179	.353	.136
Q44 (frequency of sleepovers)			-.133	.312	-.100	.406	-.355
Q45A (watching TV or movies)	-.135			.355	-.243	-.135	.188
Q45B (at computer)					-.199	-.131	-.160
Q45C (doing homework/studying)				-.144			.535
Q45D (being at home)			.113	-.148	.263	-.302	.494
Q45E (being on the telephone)	-.213	.130	-.130	.362	-.162	.279	
Q45F (being with friends)						.340	-.489
Q45G (reading)		-.102		-.337	.308	.256	.322
PC (Picture Completion of WAIS-R)	.189			-.123	.130		-.231
RODFRAME (field differentiation test)	-.146			.252			.231
PORTEUS (Mazes: Vineland Revision)				-.216	.136		-.321

Extraction Method: Principal Component Analysis.
7 components extracted.

Responses dealing with the subjects' adulthood.

Abbreviated Descriptions of "Adulthood Variables" employed in all or some of the analyses.

(N.B.: Not all variables are used in all analyses, and there are responses used in *no* analysis herein. In the *i* generation the letter "A" precedes the following terms.)

Q1 = "No sane, normal ... person would ever think of hurting the feelings of a good friend."

Q2 = "Nowadays ... the wise person lives for today and lets tomorrow take care of itself."

Q3 = "It is better to go without something than to ask a favor."

Q4 = "I set difficult goals for myself which I attempt to reach."

Q5 = "There is no reason why husbands and wives should not have exactly the same duties ..."

Q6 = "When I see someone ... in an ... unskilled job ... I wonder ... why ... n't try to do better."

Q7 = "Planning makes a person unhappy since your plans hardly ever work out anyway."

Q8 = "We would have ... less problems ... if ... foreign immigrants [weren't] so uncivilized."

Q9 = "There is no such thing as a really permanent, lifelong friendship ..."

Q10= "Homosexuals have equal rights [and] ... should be allowed to marry one another."

Q11= "If you get bad news it is better to hide what you feel and behave as if you didn't care."

Q12= "Equality has been stressed too much. We should focus on ... status, culture, character..."

Q13= "I work like a slave at everything I undertake until I am satisfied with the results."

Q14= "Taxes & medical costs are rising because those who work have to ... subsidize others ..."

Q15= "... great artists and musicians can be forgiven for not being considerate ... kind to poor."

Q16= "People who are HIV+ ... should be barred from jobs involving physical contact with ..."

Q17= "There is hardly anything lower than .. not [to] feel ... love, gratitude, respect for parents."

Q18= "Equal legal and political rights are not enough ... people should be esteemed ... equally."

Q19= "Some people take things too seriously; it's always better to ... let bygones be bygones. "

Q20= "I would irritate me ... to have a watch ... off by several minutes every day or so."

Q21= "Sometimes I feel like crying, when something painful happens ... in a book or movie ..."

Q22= "[Don't tell] facts they don't want to hear: being tactful ... more important than ...candid"

Q23= "I should like my children to visit [where] my parents and grandparents grew up."

Q24= "When someone is born, success... is already in the cards, so accept it [and don't] fight it."

Q25= "Vicious criminals ... should be hung from lampposts in their own neighborhoods."

Q26= "One should be friendly and familiar with only a handful ...distant and formal with most."

Q27= "My political opinion is easily swayed by editorials I read."

Q28= "Great cultural figures are never ahead of their time ... the masses are behind their time.

Q29= "When ... something ... turns out more risky than foreseen, I [can break] my promise."

Q30= "Someone with money cannot...behave in polite society... [without] proper upbringing."

Q31= "...it's more important to be rich and successful than to be highly educated and cultured."

Q32= "Respect is due an older man no matter what kind of person he is."

Q33= "One should always use ... language everyone can understand ... even if ... less precise."

Q34= "[do you prefer traveling] by yourself/with one other person ..., a [small]/[large] group...?"

Q35= "[When someone doesn't perform on a] a promise, [do you] get angry/make the best of it?"

Q36= "...as to... intimate experiences, [do you reveal them] to [all/friends/very few/no-one]?"

Q37= "[when referring to your own parents or theirs] do you use terms like 'Mom,' 'Dad'?"

Q39= "[You] telephone [someone]; a child answers. [do you use title/last name, first name ...]?"

Q40= "What are the three things you would most like your children to learn?" Scored for:

Q40A= "egocentricity" *Q40B*= "sociocentricity"

Q40C= "materialism" *Q40D*= "idealism"

Q41= "Please list here any *nonwork* activities (clubs, hobbies, sports) you are engaged in."

Q41A= "individual or one-on-one activities" *Q41B*= "group activities"

Q41C= "amorphous" (not clear whether individual/group, e.g., "hanging out")

Q42= "Assume that your legal name is .." 5 questions on formality/informality in names/address.

Q42ABD= degree of formality in self-identification ("my name is/please call me").

Q42CE= formal versus familiar manner of addressing doctor/priest on first meeting.

Q43= Communicating with friends/relatives one has not seen in a few years. In last year/3 years:

Q43A= How many letters written to such ...?

Q43B= How many long distance telephone calls made to such ...?

Q43C= How many telephone calls received from such ...?

Q46= "A child should never be asked to do anything, unless one also tells the reason ..."

Q51= "Are any of the three friends you spent most of your free time with ... years ago, among the three people with whom you spend most of your free time today? How many?"

Q53= "Good fortune will not bring satisfaction if one lacks the companion to share it with."

Q54= "... looking for advice about a very personal problem, [would you prefer to go to] someone your own age ... or ... to an older person?"

Q55= "Do you feel yourself closer to the culture ... of your parents/grandparents ... or to the (current) culture of people your own age?"

Q56= "Should parents be primarily [their children's] models/educators or their friends/buddies?"

Q57= "Do you believe a child will learn best from older teachers ... or from younger ones ...?".

"A items" (from McClelland et al.): Q2 + Q4 + Q13 + Q32 + Q46 ("conscious striving")

"B items": Q7 + Q9 + Q15 + Q24 ("c'est la vie, one can't fight fate")

"C items": Q1 + Q3 + Q17 + Q30 ("conscious/averred idealism")

NAMEID: knowledge of famous names/people of past/erudition. (from name identification task)

CATNUMB: number of categories subject can form quickly (after A. R. Luria)

LESSTHAN: number of categories labeled in an unsophisticated (less than functional) manner.

ABSTRACT= quality of abstraction in labeling categories formed by subject.

NETABSTRACT= 'abstract' score less the 'lessthan' score.

MATURITY= score determined by subject's preference to associate with "great cultural figures" of past vs. "current action-film star"

MOTIVATION SCORES (from T.A.T. imagery revealed in stories created by subjects):

NACH = "n-Achievement" – achievement motivation (after McClelland)

NAFFORIG = n-Affiliation – original pre-1958 version (stressing death, separation, etc.)

NAFFREV = n-Affiliation – revised (post 1958) version (more positive).

PC 36 -- *i* adulthood -- 60 variables -- $n = 132$

(No reduction necessary: no missing variables)

11 components – 53% of variance

Restricted to subjects on whom there are Q-data on both generations.

Table 4-11

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	6.966	11.610	11.610	6.966	11.610	11.610
2	3.824	6.373	17.983	3.824	6.373	17.983
3	3.474	5.790	23.773	3.474	5.790	23.773
4	2.773	4.622	28.395	2.773	4.622	28.395
5	2.466	4.110	32.506	2.466	4.110	32.506
6	2.411	4.019	36.524	2.411	4.019	36.524
7	2.300	3.833	40.357	2.300	3.833	40.357
8	2.054	3.424	43.781	2.054	3.424	43.781
9	1.900	3.166	46.947	1.900	3.166	46.947
10	1.785	2.976	49.923	1.785	2.976	49.923
11	1.684	2.807	52.730	1.684	2.807	52.730
12	1.523	2.538	55.267			
13	1.472	2.453	57.720			
14	1.392	2.319	60.039			
15	1.336	2.226	62.266			
16	1.306	2.177	64.443			
17	1.261	2.101	66.544			
18	1.192	1.987	68.531			
19	1.095	1.824	70.356			
20	1.041	1.735	72.091			
21	1.005	1.675	73.766			

Extraction Method: Principal Component Analysis.
11 components extracted

Table 4-12

PC 36 Component Matrix

		Component										
		1	2	3	4	5	6	7	8	9	10	11
AQ1B	average of both parents if both p1 & p2	**.410**	.140	-.143			-.124	.207	**.412**		**.311**	.148
AQ2B	average of both parents if both p1 & p2	**.392**	.185	.102	.141	-.187	.169	-.123	.200	**.302**	-.151	**.413**
AQ3B	average of both parents if both p1 & p2	**.486**			-.242			.200		-.183		
AQ4B	average of both parents if both p1 & p2		-.171	**.253**	.170		**.328**	**.390**	**-.253**		-.197	.184
AQ5B	average of both parents if both p1 & p2	.156	**.529**					-.125		**.314**	-.117	.109
AQ6B	average of both parents if both p1 & p2	**.365**	-.178		.105	-.120	-.109	.134	**-.278**		.194	**.255**
AQ7B	average of both parents if both p1 & p2	**.649**	.162	.229	.152	-.131		-.101	-.183	.210		-.166
AQ8B	average of both parents if both p1 & p2	**.433**	-.105	-.120	.189	.101	-.157		-.151	**.316**	-.127	
AQ9B	average of both parents if both p1 & p2	**.510**	.114			**-.502**	-.164	.115		.159	.162	-.193
AQ10B	average of both parents if both p1 & p2	**-.343**	**.527**		.116		-.152	**-.261**	-.143	.197		
AQ11B	average of both parents if both p1 & p2	**.404**	-.142	.250	.169						-.182	-.203
AQ12B	average of both parents if both p1 & p2	.184	-.198	.161	-.120	**.259**		**-.285**	.154			
AQ13B	average of both parents if both p1 & p2	**.360**	.230		-.189	.191	.125	**.256**	-.158	-.196	**-.229**	.192
AQ14B	average of both parents if both p1 & p2	**.522**	**-.356**	-.106	.222	.120	.139			.110		.196
AQ15B	average of both parents if both p1 & p2	**.618**		.139	.181			**-.361**	-.220			-.131
AQ16B	average of both parents if both p1 & p2	**.403**	**-.262**			**.268**	-.117	.167	-.189			-.112
AQ17B	average of both parents if both p1 & p2	**.534**		**-.342**	-.124	.149		-.173	.237			.159
AQ18B	average of both parents if both p1 & p2		**.271**	-.242	-.217	.148	-.153	-.120	-.103	.229	**-.305**	-.110
AQ19B	average of both parents if both p1 & p2	.196		-.232		-.196		-.149	**.387**	**-.332**	**-.389**	.127
AQ20B	average of both parents if both p1 & p2	.101			**.450**	.184		**.424**	.184		.248	
AQ21B	average of both parents if both p1 & p2		.135		.195		.146	-.212		**.419**	**.385**	**.292**
AQ22B	average of both parents if both p1 & p2	**.295**		**-.351**	-.142		**-.391**				**.298**	
AQ23B	average of both parents if both p1 & p2	.182		-.132	-.217			**-.269**	-.159	**-.455**	.239	
AQ24B	average of both parents if both p1 & p2	**.368**		**.461**	**.251**	-.245	.208	**-.259**	.168	-.164		
AQ25B	average of both parents if both p1 & p2	**.459**	**-.359**		.107	**.294**	-.162				-.133	

AQ26B	average of both parents if both p1 & p2	**.469**		**.259**		**.263**		.164	**-.261**	.177		
AQ27B	average of both parents if both p1 & p2	.106	-.135	**.398**	**.350**	.196		**-.259**	.157	-.100	-.114	.160
AQ28B	average of both parents if both p1 & p2	.242	.210		-.224	**.282**		**-.295**	-.242		-.112	.227
AQ29B	average of both parents if both p1 & p2		.147		**.295**	.188			**.362**	-.244		**-.356**
AQ30B	average of both parents if both p1 & p2	**.344**			-.103	**.513**	**-.276**	**-.252**	.177			
AQ31B	average of both parents if both p1 & p2	**.287**		**.422**	**.398**	.189		-.216	.163	**-.266**		-.125
AQ32B	average of both parents if both p1 & p2	**.485**	.202	.129	-.129	-.153		.228	.103	-.118		
AQ33B	average of both parents if both p1 & p2	**.401**	**.376**		-.202		-.161	**.257**		-.191	.131	
AQ46B	average of both parents if both p1 & p2	.176	**.643**	.157				.138		-.221	.145	.131
AQ53B	average of both parents if both p1 & p2	.189		-.223	.132	-.135	**-.343**	**.377**			.223	
AAQ34B	average of both parents if both p1 & p2	.113	**-.305**			-.216	.141	.243	.147			.166
AQ35B	average of both parents if both p1 & p2		**.526**		-.177	-.139		-.158		-.205	.129	-.188
AQ36B	average of both parents if both p1 & p2	**.421**	-.233			.142	-.276	.200			-.133	**-.272**
AAQ37B	average of both parents if both p1 & p2	-.228	**.399**	.172	.161	.169	-.200	**.352**	.117	.118	**-.332**	
AQ39B	average of both parents if both p1 & p2		**-.288**			.131		-.145	-.121	**.261**	.159	.127
AQ40AB	average of both parents if both p1 & p2	-.139	**-.310**	**.635**	**-.276**	.103	**-.250**		.132	.118		
AQ40BB	average of both parents if both p1 & p2	.116	.231	**-.698**	**.286**		**.299**		-.182	-.111		-.134
AQ40CB	average of both parents if both p1 & p2	-.226		**.620**	**-.336**	-.198	**-.335**		-.109		.125	
AQ40DB	average of both parents if both p1 & p2	.174		**-.622**	**.309**	.234	**.351**					-.162
AQ41AB	average of both parents if both p1 & p2	-.123		.211			.217		.234	**.296**	**.407**	-.239
AQ41BB	average of both parents if both p1 & p2		-.165		**.307**	.187			**-.464**	**-.313**	**.254**	
AQ41CB	average of both parents if both p1 & p2	**-.290**	.111	.223	**.303**				**-.272**	-.168	.175	**.306**
AQ42ABDB	average of both parents if both p1 & p2		-.190	.140	-.197	**.254**	.168	**.270**	-.121			-.149
AQ42CEB	average of both parents if both p1 & p2	.118	**-.329**		-.205	**-.295**	**.261**		.160	.122	.114	
AQ43AB	average of both parents if both p1 & p2		.131			.148	**.359**		.133			**-.288**
AQ43BB	average of both parents if both p1 & p2	.153	.240	.138	**-.453**	**.253**	**.495**	.105		.121	.115	-.124
AQ43CB	average of both parents if both p1 & p2		.218	.160	**-.494**	.221	**.546**	.101			.105	
AQ51B	average of both parents if	-.145	.147	**.251**	.178	**.451**			.124	-.159	**.305**	

	both p1 & p2										
AQ54B	average of both parents if both p1 & p2	**.364**			-.188	**-.247**	.127	**-.237**	-.183	-.146	
AQ55B	average of both parents if both p1 & p2	**-.345**	**.343**	.108	.176			.169	**.288**	.104	-.171
AQ56B	average of both parents if both p1 & p2		**.499**		.185	.232	-.285		-.168		-.202
AQ57B	average of both parents if both p1 & p2	**-.388**	**.286**		**.275**		-.222	.134		.155	.108
AAITEMSB	average of both parents if both p1 & p2	**.537**	**.477**	.236			.210	**.265**		-.113	-.153	**.357**
ABITEMSB	average of both parents if both p1 & p2	**.759**	.129	**.250**	.209	**-.370**		-.172		.125		-.213
ACITEMSB	average of both parents if both p1 & p2	**.735**		-.140	-.205	**.258**	-.210		**.332**		.144	.141

Extraction Method: Principal Component Analysis.
11 components extracted.

PC 37 -- $i + 1$ adulthood -- 60 variables -- $n = 378$

(Reduced to $n = 373$ due to listwise deletion for missing variables)

14 components – 51% of variance

Restricted to subjects interviewed after September 1998 ("final third").

Table 4-13

Total Variance Explained

	Initial Eigenvalues			Ext. Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	5.628	9.380	9.380	5.628	9.380	9.380
2	3.545	5.909	15.289	3.545	5.909	15.289
3	2.608	4.347	19.636	2.608	4.347	19.636
4	2.532	4.220	23.856	2.532	4.220	23.856
5	2.296	3.826	27.682	2.296	3.826	27.682
6	1.894	3.156	30.839	1.894	3.156	30.839
7	1.775	2.958	33.797	1.775	2.958	33.797
8	1.651	2.751	36.548	1.651	2.751	36.548
9	1.625	2.708	39.256	1.625	2.708	39.256
10	1.558	2.596	41.852	1.558	2.596	41.852
11	1.496	2.493	44.346	1.496	2.493	44.346
12	1.397	2.328	46.674	1.397	2.328	46.674
13	1.354	2.257	48.930	1.354	2.257	48.930
14	1.294	2.156	51.087	1.294	2.156	51.087

15	1.209	2.015	53.102
16	1.195	1.991	55.093
17	1.187	1.979	57.072
18	1.123	1.871	58.943
19	1.065	1.775	60.719
20	1.052	1.753	62.471
21	1.019	1.699	64.170
22	1.003	1.672	65.842

Extraction Method: Principal Component Analysis.

Table 4-14

PC 37 Component Matrix

	Component													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Q1	**.363**	**.328**	-.132	.119	.142	-.114	.140	-.234		-.118	.104		.139	
Q2	**.335**			**-.285**	.214	-.229	-.116	.244	**-.385**	.125	-.109	-.183		
Q3	**.365**	.156	.149	.219	-.222		.105			-.198	.153	**-.346**	.125	
Q4		**.295**			**.256**	**.438**	-.190	**.332**		.163			-.218	
Q5		**.303**			.244		.176	.215	.194	-.228	**.251**		-.238	.223
Q6	**.321**		**-.312**			**.287**	.149	.206		-.100	.181	-.174		
Q7	**.495**		**.254**		-.133	-.200	-.183	.230	-.165				.154	
Q8	**.407**	-.192	**-.252**	.147	**-.267**				.197	.209			-.128	
Q9	**.529**	-.231		-.106			-.165	**.254**	.103		.175		.174	
Q10	**-.253**	.227	**.258**	.182	**.283**	**-.317**	.121	.211	.198	-.116				
Q11	**.304**	-.216	.114	.110	-.174		-.189	.108		-.226	.240			
Q12	**.464**	-.111		.114	-.131		.136		.137			**-.310**	-.166	-.188
Q13	.131	**.308**	.211	**.298**	.126	**.466**					-.185	-.111		-.214
Q14	.209		**-.262**	.192	-.196	.139	**.343**					-.106	**-.333**	-.224
Q15	**.464**	-.119		-.195	-.192	**-.260**			.123					
Q16	**.289**	**-.319**	-.212		-.184	.182				.151	.160		.172	.161
Q17	**.500**	**.292**	**-.353**					-.106		-.107				
Q18		**.402**			.143	-.177	.158				-.192	.155	.140	**.255**
Q19	**.355**	.128	-.252	-.156	.267	-.115	-.105	-.171			-.169			
Q20	**.257**		-.236			**.271**	**.273**		-.117			.160	-.135	.196
Q21	-.188	.227		.118		-.150	.242	**.286**	.181				.204	-.180
Q22	**.365**	.107	-.147		.134		.118	-.185	.146				-.119	-.345
Q23	.207	**.296**	-.191	**-.286**	.166			.159	**.285**		-.117	.120		-.106
Q24	.554		.146	-.172	.142	-.206			.255		-.116			
Q25	**.376**	**-.252**	-.227		-.182			-.214	-.120	.207		.177	.118	
Q26	**.374**		.193	.121	-.217		-.103		.155	-.153		.187		
Q27	**.282**						.214	.166	.238	-.104	**-.308**	-.103		.209
Q28	.217				.171	-.148		**.380**				**.352**		**.297**
Q29	.200	-.238				-.133	.181	.227	.125	.283	**-.327**	.110	-.209	
Q30	**.368**	.216		.186			**.357**	-.169				.196	.190	
Q31	**.321**	**-.468**		.136						.188	.148	.155	-.117	.119
Q32	**.496**	.194		-.195	**.258**		-.194	**-.325**				-.115	-.140	
Q33	**.454**	.117			.126	-.143	-.211	**-.261**			.107		-.195	
Q46	.168	.128	**.405**	**.515**				.149	-.197	.116	.159	.109		
Q53	.183	.125	-.194	**.306**	.219					.165	.211	**.273**	-.187	
AQ34				-.122	-.146	.107		.179	.231	-.250		**.261**		-.164

aq34=adjusted aq													
Q35		**.296**	.228		.234	-.187	-.157	-.220	.104			.119		-.228
Q36	.101	.177	.158		-.131		-.250		-.158	-.143		**.268**	**-.262**	
AQ37			**.348**	.169	-.110	.154		**-.289**		-.177		-.103		.122
aq37=(q37ab+(inreverse q37cd)+q37ef)														
Q39ABCD		.129		.139		.188				.142	**-.318**	**.275**	.183	-.216
Q40A		**-.540**	.163		**.476**			-.197	**.319**	.173	**.290**			
Q40B		**.588**	-.241		**-.457**			.180	-.234	-.130	-.246			
Q40C		**-.504**	.202		**.418**	.209	.244		-.177	**-.335**	-.159		.119	-.133
Q40D	-.112	**.499**	**-.266**		**-.340**	-.213	-.249		**.265**	**.345**	.200	-.143		.110
Q41A	-.179	.219	.182	**.346**	-.181		.121	.109	**.266**	**.278**	.161			-.117
Q41B			-.224	-.111	.228	.212	-.109		.227	.152	-.215		.237	**.314**
Q41C			**.270**	**.292**		.115			.130	.228	-.140		**.283**	**.326**
Q42ABD		.230	**.414**	**.269**	-.129		.150	-.226	.166	-.108				.147
Q42CE		.125	**-.304**		.246	.199						**-.426**	.221	.143
Q43A		**.282**	**.276**	**-.253**		.114	.111		.125	.284	.171	-.219		
Q43B		.154	**.393**	**-.636**	-.138	.176	**.410**		-.116	.176	.195			
Q43C		.109	**.335**	**-.618**	-.172	.179	**.400**		-.214	.158	.201			
Q51	.223		.217		-.148			-.123			**-.430**		**-.267**	.129
Q54	.148		.179	-.153	-.202	**.261**	-.135					.216	**.357**	-.207
Q55		-.112		**.271**	.199	**-.315**	.170		**-.331**			-.123	-.146	
Q56		-.127	**.260**	.208	-.134	-.166			-.114	.151		-.155	.110	
Q57	-.176			.128		-.160	.130		-.209	**.412**			.128	**-.334**
AITEMS aitems=(q2 + q4 + q13 + q32 +q46)	**.535**	**.368**	**.259**	.150	**.329**	**.266**	**-.255**	.166	**-.263**	.196		-.116		
BITEMS bitems=(q7 + q9 + q15 + q24)	**.788**	-.210	.182	-.195		**-.262**	-.137	.215	.124				.103	
CITEMS citems=(q1 + q3 + q17 + q30)	**.661**	**.412**	-.158	.207			**.279**	-.194	-.104	-.164	.126		.216	

Extraction Method: Principal Component Analysis.
14 components extracted.

PC 38 -- $i + 1$ adulthood -- 60 variables -- $n = 132$

(No reduction: no missing variables)

12 components – 52% of variance

Restricted to subjects on whom there are Q-data on both generations.

Table 4-15

Total Variance Explained

	Initial Eigenvalues			Ext. Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	6.130	10.217	10.217	6.130	10.217	10.217
2	3.351	5.586	15.802	3.351	5.586	15.802
3	3.205	5.341	21.144	3.205	5.341	21.144
4	2.957	4.928	26.071	2.957	4.928	26.071
5	2.660	4.433	30.505	2.660	4.433	30.505
6	2.413	4.022	34.527	2.413	4.022	34.527
7	1.993	3.321	37.848	1.993	3.321	37.848
8	1.876	3.126	40.974	1.876	3.126	40.974
9	1.825	3.042	44.016	1.825	3.042	44.016
10	1.678	2.796	46.812	1.678	2.796	46.812
11	1.667	2.778	49.590	1.667	2.778	49.590
12	1.632	2.720	52.310	1.632	2.720	52.310
13	1.526	2.544	54.854			
14	1.455	2.426	57.279			
15	1.375	2.292	59.571			
16	1.326	2.209	61.780			
17	1.293	2.155	63.935			
18	1.257	2.095	66.030			
19	1.224	2.039	68.069			
20	1.185	1.975	70.044			
21	1.124	1.873	71.918			
22	1.081	1.802	73.720			
23	1.015	1.692	75.412			

Extraction Method: Principal Component Analysis.

Table 4-16

PC 38
Component Matrix

	Component											
	1	2	3	4	5	6	7	8	9	10	11	12
Q1	.152	**.351**	**.395**			-.185	**.294**	.184	-.120			-.224
Q2	**.473**	.123	-.115	-.231		-.193	-.184		-.189	**.252**	.217	**.319**
Q3	**.360**	.201	-.112	**.344**		**-.293**		-.126				
Q4			**.307**	**-.285**	**.414**	**.315**	**-.317**					.145
Q5	-.195	.244	.212		.145			.239		**-.388**		
Q6	**.425**	-.166				.120		**.389**	**-.317**	-.145	-.148	-.166
Q7	**.362**	.111	**-.527**	.151		-.115	-.123					.150
Q8	**.504**			.194	-.139	**.342**	**.233**			.131		.106
Q9	**.578**		-.153				**-.355**	.141	-.162	-.168	-.113	.130
Q10	**-.423**			**.391**	**.269**		-.140				-.227	
Q11	**.396**		**-.342**	.226			-.178					-.213
Q12	**.452**	-.141		.153			**.286**		-.174		**.270**	-.152
Q13			**.269**		**.563**	.248	-.132		-.165	**.258**	-.136	.110
Q14	**.267**		.158			**.347**	**.269**	**.253**		.156	.123	
Q15	**.541**		**-.278**		-.103	.170			.104			-.103
Q16	**.266**	**-.321**			-.102	.195	.140	.224		.162	.209	
Q17	**.428**	**.367**	**.414**	-.180	-.194			.101				
Q18		**.342**			.221	**-.283**				-.210		.130
Q19	**.338**	.170	**.276**		**-.309**		-.156	**-.233**	.158		.162	**.415**
Q20	**.386**					**.266**	.106	**.365**		**-.273**	.167	
Q21	**-.322**	.246	.163	.190		.230	-.192	**.273**	.132	.249	.107	-.127
Q22	**.326**	.222	**.285**	.142			-.130		**.349**	.139		
Q23	.144		**.267**	**-.319**				-.144	.104	.212	**-.336**	.158
Q24	**.540**		.113	.185	.213	-.121		**-.295**	.224		-.129	.112
Q25	**.410**			.155	**-.281**	.153	.183		.225	.202		.196
Q26	**.377**	.109		.239	.185	.135	-.147	.163	.222			
Q27	**.321**	-.142	.119		.233		**.328**				.246	.127
Q28	**.266**			.160	**.270**	.174		.244		**-.258**	.103	
Q29		**-.291**	.175	.218	.216	.157	.232		.129		-.141	**.443**
Q30	**.300**	.147	.120	.232	.122	**-.296**	.123	**.357**	**.324**	-.157	-.141	.151
Q31	**.440**	-.107		.221	-.139	.177				**.312**	-.149	-.208
Q32	**.485**		**.346**	**-.360**		-.145		-.167	-.138			**-.279**
Q33	**.441**	.132		.180				-.246				**-.372**
Q46		.168	-.249	**.513**	**.483**		-.122	.151		.120		-.130
Q53	.148	.186	**.344**			**.356**			-.112	-.141	**-.323**	-.102
AQ34 aq34=adjusted aq				-.184	-.161	**.336**	-.124	.101	**.352**	-.154	.152	
Q35		.156	**.253**		.191	-.224	-.114	-.230	.181	**-.260**		-.103
Q36			**-.293**	-.166		**.310**		.131	.112		**.334**	**-.241**
AQ37 aq37=(q37ab+(inreverse q37cd)+q37ef)					**.286**		-.150	-.154			**.561**	.172
Q39ABCD	-.135		.163			.168	.131	.119	.115	.242		.228
Q40A		**-.619**	**.346**			-.134	-.246		**.408**			-.221

Q40B		**.656**	**-.257**		-.111	.163	.188		**-.439**			.213
Q40C	.154	**-.687**	.112	.182		**-.357**		.136	-.195			
Q40D	-.176	**.718**				**.359**		-.187	.159			
Q41A	**-.359**	.136		.250	.206	.170	.227		.191		-.226	
Q41B		**-.317**	**.380**	-.135		.145		-.177		-.112	.133	.128
Q41C	-.142			**.278**	**.319**	.192	.198		-.114	-.238		
Q42ABD				.138	.250	-.125	**.329**	-.212	.172	-.113	**.446**	-.242
Q42CE			**.486**		-.109	**-.300**			-.220	**.297**		-.120
Q43A				**-.282**	**.313**	-.168			.244	**.287**	.140	
Q43B	.101		**-.382**	**-.589**	**.304**	-.254	.231	.223	.247	.129		
Q43C			**-.423**	**-.589**	.225	-.210	**.255**	.247	.214			
Q51	.215	-.147	-.113		**.291**		**.464**	**-.251**	-.149		-.120	
Q54	.249		-.189	-.228	.219	.104	.164		-.199	-.170	**-.271**	-.201
Q55	-.118			**.415**	-.207	**-.291**		.209	-.137		.169	.162
Q56	-.218	-.131	-.116	.240			.161	-.141		.185		
Q57	**-.359**	.183		**.251**				**.370**		**.343**		.132
AITEMS aitems=(q2 + q4 + q13 + q32 +q46)	**.399**	.146	.221	-.136	**.626**		**-.321**		-.245	**.286**		
BITEMS bitems=(q7 + q9 + q15 + q24)	**.797**		**-.329**	.104			-.211	-.108		-.104	-.122	.115
CITEMS citems=(q1 + q3 + q17 + q30)	**.523**	**.446**	**.343**	.175		**-.358**	.178	.223				

Extraction Method: Principal Component Analysis.
12 components extracted.

PC 39 -- $i + 1$ adulthood -- 60 variables -- $n = 1178/378$

(Reduced to $n = 373$ due to listwise deletion for missing variables)

14 components – 51% of variance

Sole purpose of this analysis is to show how items Q55, Q56, & Q57 relate to rest of items.

Table 4-17

Total Variance Explained

	Initial Eigenvalues			Ext. Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	5.628	9.380	9.380	5.628	9.380	9.380
2	3.545	5.909	15.289	3.545	5.909	15.289
3	2.608	4.347	19.636	2.608	4.347	19.636
4	2.532	4.220	23.856	2.532	4.220	23.856
5	2.296	3.826	27.682	2.296	3.826	27.682
6	1.894	3.156	30.839	1.894	3.156	30.839
7	1.775	2.958	33.797	1.775	2.958	33.797
8	1.651	2.751	36.548	1.651	2.751	36.548
9	1.625	2.708	39.256	1.625	2.708	39.256
10	1.558	2.596	41.852	1.558	2.596	41.852
11	1.496	2.493	44.346	1.496	2.493	44.346
12	1.397	2.328	46.674	1.397	2.328	46.674
13	1.354	2.257	48.930	1.354	2.257	48.930
14	1.294	2.156	51.087	1.294	2.156	51.087
15	1.209	2.015	53.102			
16	1.195	1.991	55.093			
17	1.187	1.979	57.072			
18	1.123	1.871	58.943			
19	1.065	1.775	60.719			
20	1.052	1.753	62.471			
21	1.019	1.699	64.170			
22	1.003	1.672	65.842			

Extraction Method: Principal Component Analysis.
14 components extracted

Table 4-18

PC 39
. Component Matrix

	Component													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Q1	**.363**	**.328**	-.132	.119	.142	-.114	.140	-.234		-.118	.104		.139	
Q2	**.335**			**-.285**	.214	-.229	-.116	.244	**-.385**	.125	-.109	-.183		
Q3	**.365**	.156	.149	.219	-.222		.105			-.198	.153	**-.346**	.125	
Q4		**.295**			**.256**	**.438**	-.190	**.332**		.163			-.218	
Q5		**.303**			.244		.176	.215	.194	-.228	**.251**		-.238	.223
Q6	**.321**		**-.312**			**.287**	.149	.206		-.100	.181	-.174		
Q7	**.495**		**.254**		-.133	-.200	-.183	.230	-.165				.154	
Q8	**.407**	-.192	-.252	.147	**-.267**				.197	.209			-.128	
Q9	**.529**	-.231		-.106			-.165	**.254**	.103		.175		.174	
Q10	**-.253**	.227	**.258**	.182	**.283**	**-.317**	.121	.211	.198	-.116				
Q11	**.304**	-.216	.114	.110	-.174		-.189	.108		-.226	.240			
Q12	**.464**	-.111		.114	-.131		.136		.137			**-.310**	-.166	-.188
Q13	.131	**.308**	.211	**.298**	.126	**.466**					-.185	-.111		-.214
Q14	.209		**-.262**	.192	-.196	.139	**.343**					-.106	**-.333**	-.224
Q15	**.464**	-.119		-.195	-.192	**-.260**			.123					
Q16	**.289**	**-.319**	-.212		-.184	.182				.151	.160		.172	.161
Q17	**.500**	**.292**	**-.353**					-.106		-.107				
Q18		**.402**			.143	-.177	.158				-.192	.155	.140	**.255**
Q19	**.355**	.128	**-.252**	-.156	**.267**	-.115	-.105	-.171			-.169			
Q20	**.257**		-.236			**.271**	**.273**		-.117			.160	-.135	.196
Q21	-.188	.227		.118		-.150	.242	**.286**	.181				.204	-.180
Q22	**.365**	.107	-.147		.134		.118	-.185	.146				-.119	**-.345**
Q23	.207	**.296**	-.191	**-.286**	.166			.159	**.285**		-.117	.120		-.106
Q24	**.554**		.146	-.172	.142	-.206			**.255**		-.116			
Q25	**.376**	**-.252**	-.227		-.182			-.214	-.120	.207		.177	.118	
Q26	**.374**		.193	.121	-.217		-.103		.155	-.153		.187		
Q27	**.282**						.214	.166	.238	-.104	**-.308**	-.103		.209
Q28	.217				.171	-.148		**.380**				**.352**		**.297**
Q29	.200	-.238				-.133	.181	.227	.125	**.283**	**-.327**	.110	-.209	
Q30	**.368**	.216		.186			**.357**	-.169				.196	.190	
Q31	**.321**	**-.468**		.136						.188	.148	.155	-.117	.119
Q32	**.496**	.194		-.195	**.258**		-.194	**-.325**				-.115	-.140	
Q33	**.454**	.117			.126	-.143	-.211	**-.261**			.107		-.195	
Q46	.168	.128	**.405**	**.515**				.149	-.197	.116	.159	.109		
Q53	.183	.125	-.194	**.306**	.219					.165	.211	**.273**	-.187	
AQ34				-.122	-.146	.107		.179	.231	-.250		**.261**		-.164
aq34=adjusted aq														
Q35		**.296**	.228		.234	-.187	-.157	-.220	.104			.119		-.228
Q36	.101	.177	.158		-.131		-.250		-.158	-.143		**.268**	**-.262**	
AQ37			**.348**	.169	-.110	.154		**-.289**		-.177		-.103		.122
aq37=(q37ab+(inreverse q37cd)+q37ef)														
Q39ABCD		.129		.139		.188				.142	**-.318**	**.275**	.183	-.216
Q40A		**-.540**	.163		**.476**			-.197	**.319**	.173	**.290**			

										.173				
Q40B		**.588**	-.241		**-.457**			.180	-.234	-.130	-.246			
Q40C		**-.504**	.202		**.418**	.209	.244		-.177	**-.335**	-.159		.119	-.133
Q40D	-.112	**.499**	**-.266**		**-.340**	-.213	-.249		**.265**	**.345**	.200	-.143		.110
Q41A	-.179	.219	.182	**.346**	-.181		.121	.109	**.266**	**.278**	.161			-.117
Q41B			-.224	-.111	.228	.212	-.109		.227	.152	-.215		.237	**.314**
Q41C			**.270**	**.292**		.115			.130	.228	-.140		**.283**	**.326**
Q42ABD		.230	**.414**	**.269**	-.129		.150	-.226	.166	-.108				.147
Q42CE		.125	**-.304**		.246	.199						**-.426**	.221	.143
Q43A		**.282**	**.276**	**-.253**		.114	.111		.125	**.284**	.171	-.219		
Q43B		.154	**.393**	**-.636**	-.138	.176	**.410**		-.116	.176	.195			
Q43C		.109	**.335**	**-.618**	-.172	.179	**.400**		-.214	.158	.201			
Q51	.223		.217		-.148			-.123			**-.430**		**-.267**	.129
Q54	.148		.179	-.153	-.202	**.261**	-.135					.216	**.357**	-.207
Q55		-.112		**.271**	.199	**-.315**	.170		**-.331**			-.123	-.146	
Q56		-.127	**.260**	.208	-.134	-.166			-.114	.151		-.155	.110	
Q57	-.176			.128		-.160	.130		-.209	**.412**			.128	**-.334**
AITEMS aitems=(q2 + q4 + q13 + q32 +q46)	**.535**	**.368**	**.259**	.150	**.329**	**.266**	**-.255**	.166	**-.263**	.196		-.116		
BITEMS bitems=(q7 + q9 + q15 + q24)	**.788**	-.210	.182	-.195		**-.262**	-.137	.215	.124				.103	
CITEMS citems=(q1 + q3 + q17 + q30)	**.661**	**.412**	-.158	.207			**.279**	-.194	-.104	-.164	.126		.216	

Extraction Method: Principal Component Analysis.
14 components extracted.

PC 40 -- $i + 1$ adulthood -- 57 variables -- $N = 1158$

(Reduced to $n = 1138$ due to listwise deletion for missing variables)

15 components – 51% of variance

Excluding the 3 items only administered to a portion of the pupil-subjects: Q55, Q56, & Q57

Table 4-19

Total Variance Explained

	Initial Eigenvalues			Ext. Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	5.296	9.292	9.292	5.296	9.292	9.292
2	3.382	5.934	15.226	3.382	5.934	15.226
3	2.506	4.396	19.622	2.506	4.396	19.622
4	2.406	4.221	23.842	2.406	4.221	23.842
5	2.093	3.672	27.514	2.093	3.672	27.514
6	1.827	3.206	30.720	1.827	3.206	30.720
7	1.599	2.805	33.524	1.599	2.805	33.524
8	1.484	2.604	36.128	1.484	2.604	36.128
9	1.358	2.382	38.510	1.358	2.382	38.510
10	1.305	2.289	40.799	1.305	2.289	40.799
11	1.276	2.238	43.037	1.276	2.238	43.037
12	1.219	2.138	45.175	1.219	2.138	45.175
13	1.191	2.089	47.263	1.191	2.089	47.263
14	1.140	1.999	49.263	1.140	1.999	49.263
15	1.129	1.981	51.243	1.129	1.981	51.243
16	1.083	1.899	53.143			
17	1.053	1.847	54.989			
18	1.048	1.839	56.829			
19	1.002	1.758	58.586			

Extraction Method: Principal Component Analysis.
15 components extracted

Table 4-20

PC 40
Component Matrix

	Component														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Q1	.375	.309				-.230	-.293		-.189		-.142				.122
Q2	.369		.345		.134	-.180		-.232	.249		-.135		-.283	.267	
Q3	.319	.159		.204	.179		-.194		-.257		-.112		-.358	-.169	
Q4	.208	.259			-.392		.455	-.288			-.118				-.106
Q5	-.208	.290	.143	.117					-.109	.397	.234	.107		-.100	
Q6	.404			-.282	-.146		.198		-.122	.239			-.115		.115
Q7	.390	-.102	.183	.187	.479			-.154			-.115	-.142		.166	
Q8	.475		-.356	-.190		.122		.200	.130					.136	
Q9	.401	-.235			.269		.202	-.157	-.177	.171	-.124	.169	.239	-.110	
Q10	-.329	.260	.191	.263	.233					.297		.135	-.146		
Q11	.236	-.170	-.261	.129	.139	.219		-.312	-.108			.117	-.229	-.104	.136
Q12	.392		-.109		.117	.183	.140			-.165		-.122	-.238		.184
Q13	.128	.417		.280	-.285	.128	.368					-.202			
Q14	.406		-.192	-.166	-.158					.238			-.143		.189
Q15	.445	-.116	.135		.318		.115		.117					-.167	
Q16	.366	-.231	-.279	-.191	-.172	.106		-.114			-.105				
Q17	.574	.253		-.110	-.165	-.167	-.106	.109	-.143				.171		
Q18		.303	.301	.104		-.249				.284	.156		.177	-.140	.107
Q19	.335		.217			-.324		-.133			.260				.190
Q20	.296		-.143		-.232	.113				.252	.285	-.144	-.102		
Q21	-.257	.257	.179		.138		.251	.344	-.117	.215				.199	-.138
Q22	.339							.164			.346		.219		
Q23	.209	.221	.181	-.234	-.177		.149	.192						-.243	-.206
Q24	.465		.247		.299		.160	.197		-.129	.162		.133	-.100	
Q25	.491	-.152	-.236									-.103		.210	
Q26	.197		-.255	.224	.187	.323									-.243
Q27	.138				.109		.109	.364			.325	-.105	-.340		-.215
Q28											.119	-.110		.345	
Q29	.146	-.191					.151	.293	.181	.242					
Q30	.308	.289	-.128				-.242	.334			-.297				-.223
Q31	.306	-.213	-.343				-.118		.345	.183	.114	.138	.108	.149	
Q32	.457	.299	.133		-.130				.135	-.319	.181	.137			-.178
Q33	.373	.191		.178		-.100	-.219		.195	-.177	.314				
Q46	-.147	.369	-.104	.473	.118				.166					.246	
Q53	.247	.241	-.133		-.153	-.182				.136		.124	.151	.275	.275
AQ34						.302	.218	.144	-.331		.180		.141	.335	
aq34=adjusted aq															
Q35		.150	.162		.179	-.121	-.151	.145	-.254	-.307			.106		.265
Q36		.115	-.182			.218		-.194			.266		.266	.100	-.361
AQ37			-.276	.183		.207	-.156	-.162			.142			-.309	
aq37=(q37ab+(inreverse q37cd)+q37ef)															
Q39ABC	-.152	.195	-.107	.209		.105		.245	.159		-.138	-.291			

D															
Q40A	.156	**-.505**	.126	**.467**	**-.316**			.196				**.442**			
Q40B	-.153	**.557**	-.169	**-.496**	**.308**			-.166				**-.356**			
Q40C		**-.528**	.109	**.490**	**-.264**				-.117	.119		**-.387**			
Q40D		**.527**	-.148	**-.462**	.225		.123		.114	-.132		**.455**	-.119		
Q41A	**-.304**	.229		.172		**.262**	.221	.202	-.115			.129			**.253**
Q41B			.171	-.170	-.143	-.235	.243		.193	-.109	-.168		.199	-.236	
Q41C	-.173	.154	-.146	**.269**		.132		.154	**.331**	.101	-.180		.204	-.211	**.274**
Q42ABD		.217	-.230	**.263**		**.268**	-.143				**.258**			-.180	**.315**
Q42CE	.150			-.186	-.216	-.174			-.151		.148		**-.348**		
Q43A		.192	**.385**		-.134	**.273**				-.131		.122			.114
Q43B	.130		**.631**	-.211	-.201	**.544**	**-.285**			.123					
Q43C	.102		**.577**	-.217	-.193	**.556**	-.328			.134					
Q51	.129							**.265**	**.330**	-.248		-.197	-.200	-.113	.150
Q54	.106	.106				.200	.140		**-.322**	**-.282**		-.245	.129		.239
AITEMS	**.434**	**.535**	.180	**.401**	-.196		**.264**	**-.257**	.202					.141	-.137
aitems=(q 2 + q4 + q13 + q32 +q46)															
BITEMS	**.676**	-.218	**.251**		**.541**		.190						.139		
bitems=(q 7 + q9 + q15 + q24)															
CITEMS	**.665**	**.424**	-.111			-.133	**-.345**	.187	**-.251**		-.240				
citems=(q 1 + q3 + q17 + q30)															

Extraction Method: Principal Component Analysis.
15 components extracted.

PC 41 -- $i + 1$ adulthood -- 63 variables -- $N = 1158$

(Reduced to $n = 1136$ due to listwise deletion for missing variables)

16 components – 51% of variance

Includes the 6 variables from identification/categorization tasks

Table 4-21

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	5.773	9.163	9.163	5.773	9.163	9.163
2	3.497	5.550	14.713	3.497	5.550	14.713
3	2.695	4.277	18.990	2.695	4.277	18.990
4	2.499	3.967	22.957	2.499	3.967	22.957
5	2.133	3.386	26.343	2.133	3.386	26.343
6	1.890	3.001	29.343	1.890	3.001	29.343
7	1.824	2.896	32.239	1.824	2.896	32.239
8	1.556	2.470	34.709	1.556	2.470	34.709
9	1.491	2.367	37.076	1.491	2.367	37.076
10	1.372	2.177	39.253	1.372	2.177	39.253
11	1.367	2.170	41.423	1.367	2.170	41.423
12	1.279	2.031	43.454	1.279	2.031	43.454
13	1.261	2.002	45.456	1.261	2.002	45.456
14	1.226	1.946	47.402	1.226	1.946	47.402
15	1.200	1.904	49.307	1.200	1.904	49.307
16	1.148	1.821	51.128	1.148	1.821	51.128
17	1.132	1.796	52.924			
18	1.095	1.739	54.663			
19	1.056	1.676	56.339			
20	1.046	1.660	57.999			
21	1.015	1.612	59.611			

Extraction Method: Principal Component Analysis.

Table 4-22

PC41
Component Matrix

	Components															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Q1	**.341**	**.350**				.104	-.232	**.285**		.108	-.141	-.154				.150
Q2	**.366**		-.158	**.302**		.125	-.150		-.240		**.262**		-.175	**-.276**	.131	.102
Q3	**.285**	.210	.157	.129	.190			.168	-.103	.228	-.177		-.119	-.106	**.333**	
Q4	.167	**.275**		.133	**-.368**	.147	**.274**	**-.399**	-.218			-.163				-.158
Q5	-.224	**.254**	-.121	.172						**.318**	.201	-.169	.173	.208		
Q6	**.412**			-.221	-.136	.124	.165	-.162		.196		-.196				.137
Q7	**.383**			**.298**	**.456**				-.161					-.173		.148
Q8	**.469**		.232	**-.336**			.172		.186	-.128						
Q9	**.397**	-.199		.115	.271		.167	-.135	-.150	.148		-.206		.179	-.219	-.114
Q10	**-.344**	.226	-.104	**.294**	.198		-.169		.122	.185	.197	-.158			.116	
Q11	.197		**.357**		.158	-.104	.197		**-.305**	.217					.165	.188
Q12	**.372**		.154		.147		.182	-.108			-.153	.119		-.123	.173	.242
Q13		**.452**	.143	.163	**-.252**		.150	**-.372**				-.108	.188	-.143		
Q14	**.407**		.115	-.228	-.139		.142				.145	-.141			.133	.177
Q15	**.450**			.111	**.302**		.133				.111		-.112			
Q16	**.369**	-.175	.196	**-.302**	-.139		.167		-.104				-.101			
Q17	**.555**	**.300**			-.167	.129	-.103	.121			-.102				-.185	
Q18		**.264**	-.230	**.264**		.128	-.216					-.227	**.254**	.226		
Q19	**.329**		-.157	.128		**.310**	-.153		-.139				.246	.160		.149
Q20	**.285**			-.155	-.209		.146				.195		**.287**		.232	
Q21	**-.276**	.211	-.189	.132	.118	.114		-.142	**.384**	.231	.100					
Q22	**.331**								.159	.113	.161	.171	.213	.198	-.171	
Q23	.206	.194	**-.255**		-.176	.211	.148		.174							-.155
Q24	**.477**		-.143	.196	**.279**				.205			.184	.113		-.128	
Q25	**.494**		.192	-.210										-.107		
Q26	.146	.126	**.340**		.228	-.142	**.280**									-.211
Q27	.146				.117				**.363**			.149	.191		**.461**	-.128
Q28													.174			
Q29	.159	-.180							**.340**		.249	-.129				
Q30	**.263**	**.333**	.126					**.339**	**.280**			-.158	-.212			**-.308**
Q31	**.304**	-.128	**.370**	-.146		-.140				-.192	**.301**	-.110		.213		
Q32	**.433**	**.331**		.139	-.143					-.148		**.348**		.116		-.176
Q33	**.354**	.226		.145			-.213	.131		-.144		**.296**	.163	.163		-.125
Q46	-.205	**.398**	.237	**.280**	.128	-.189					.114					
Q53	.216	**.277**			-.147	.119	-.124					-.102		.218		.162
AQ34 aq34=adjusted aq						-.127	**.304**	-.146	.194	.242	-.189		.150		-.164	
Q35		.111	-.177	.105	.156		-.192	.108	.125		**-.301**	.244			-.163	.208
Q36		.150	.160			-.243			-.160	.169		.250	.178		**-.269**	**-.301**
AQ37 aq37=(q37ab+(inreverse q37cd)+q37ef)			**.289**			-.226		.101	-.162			.109	.160			-.154
Q39ABCD	-.172	.207	.130			-.132			**.283**	-.152		-.113		**-.301**	-.131	
Q40A	.156	**-.435**	**.310**	**.440**	**-.332**				.189			.114	**-.297**	**.326**		

Q40B	-.158	**.491**	**-.289**	**-.481**	**.332**				**-.172**					**.238**	**-.262**	
Q40C		**-.470**	**.316**	**.435**	**-.291**		-.135	.103					**-.112**	**.301**	-.242	-.105
Q40D		**.481**	**-.257**	**-.433**	**.258**			-.118					.133	**-.353**	**.296**	.115
Q41A	**-.352**	.233	.106	.112			**.295**		.212					-.136		.228
Q41B		-.112	-.160		-.157	.335		-.127		**-.282**				-.124	-.182	
Q41C	-.228	.191	**.255**	.133			.135		.146	**-.366**	.153	-.207		.139	-.125	.210
Q42ABD	-.106	**.262**	**.267**			**-.324**								.169	.241	**.259**
Q42CE	.150			-.116	-.231	.202				.209		.199			**.271**	.205
Q43A		.146	**-.304**	**.250**	-.143	-.194	.205			-.109		.109	-.108			.146
Q43B	.178		**-.576**	.220	-.229	**-.356**	**.394**	**.333**			.149					
Q43C	.141		**-.529**	.186	-.218	**-.357**	**.403**	**.381**	-.111		.173					
Q51	.130								.233	**-.354**		.222		-.153	.218	.143
Q54	.100	.104					.216	-.107			**-.448**		.133	-.109	-.116	.185
AITEMS aitems=(q2 + q4 + q13 + q32 +q46)	**.366**	**.586**		**.424**	-.203			**-.332**	-.181	-.154	.100			-.151		-.130
BITEMS bitems=(q7 + q9 + q15 + q24)	**.677**	-.178		**.283**	**.519**		.141	-.108							-.189	
CITEMS citems=(q1 + q3 + q17 + q30)	**.610**	**.501**	.127				-.137	**.380**	.108	.165	-.204	-.180	-.154			
NAMEID	**-.438**	**.318**	**.368**				.100				.136				-.140	.190
CATNUMB		.123	.187						-.192	**-.345**	**-.274**	-.108	.100	.211		.137
LESSTHAN number of categories (Parts 1 & 2) labelled less than functionally	**-.251**	.205	**.252**		**-.219**	.203		.100		**.285**	**.390**	**.356**	-.143	-.207	-.249	.165
ABSTRACT	**-.365**		.238	.179		**.626**	**.373**	**.331**	-.101		.104	.176				
NETABST abstract – lessthanabstract	-.221			.247	.143	**.550**	**.412**	**.294**		-.177	-.181		.174		.137	-.149
MATURITY	**-.480**		.183	.166			.224							-.149	.170	

Extraction Method: Principal Component Analysis.
16 components extracted.

PC 43 -- $i + 1$ adulthood -- 66 variables -- $n = 791$

(Reduced to $n = 775$ due to listwise deletion for missing variables)

16 components – 51% of variance

Includes the 3 motivation scores & all subjects tested since October 1995 ("final 2/3")

Table 4-23

Total Variance Explained

	Initial Eigenvalues			Ext. Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	5.586	8.463	8.463	5.586	8.463	8.463
2	3.726	5.646	14.109	3.726	5.646	14.109
3	2.828	4.284	18.393	2.828	4.284	18.393
4	2.477	3.754	22.147	2.477	3.754	22.147
5	2.136	3.236	25.383	2.136	3.236	25.383
6	1.999	3.029	28.412	1.999	3.029	28.412
7	1.890	2.864	31.275	1.890	2.864	31.275
8	1.837	2.784	34.059	1.837	2.784	34.059
9	1.638	2.482	36.542	1.638	2.482	36.542
10	1.496	2.267	38.809	1.496	2.267	38.809
11	1.443	2.187	40.996	1.443	2.187	40.996
12	1.371	2.078	43.074	1.371	2.078	43.074
13	1.360	2.061	45.135	1.360	2.061	45.135
14	1.328	2.012	47.146	1.328	2.012	47.146
15	1.305	1.977	49.123	1.305	1.977	49.123
16	1.252	1.898	51.021	1.252	1.898	51.021
17	1.149	1.741	52.762			
18	1.129	1.711	54.473			
19	1.119	1.696	56.168			
20	1.107	1.677	57.846			
21	1.094	1.658	59.504			
22	1.049	1.589	61.093			
23	1.016	1.540	62.632			

Extraction Method: Principal Component Analysis.
16 components extracted

Table 4-24

PC 43
Component Matrix

	Component															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Q1	.282	.395			.128		-.153	-.182	-.290		.234					
Q2	.387		-.262	.226		.186	-.130				-.118	-.400	-.186	.150		
Q3	.248	.237	.161		-.184				-.170	-.312		-.196	-.110	-.127		.306
Q4		.311			.279	-.102	-.221	.329	.396						.140	-.200
Q5	-.230	.238	-.129	.186		.158	.128		.139	-.155	.209		.154	.225		
Q6	.350			-.258	.164			.137	.235	-.154	.228			-.106		
Q7	.441			.261	-.291	.252				-.126		-.320			-.104	
Q8	.393		.340	-.299				.146		.223						
Q9	.462	-.156		.119	-.114	.219			.132	-.119	.108		-.120			-.260
Q10	-.339	.158	-.160	.312	-.151	.100		-.218	.117		.300					
Q11	.196		.367		-.111			.201		-.370			-.152	.203		.102
Q12	.387		.184		-.117		.123	.151		-.168	-.125			-.113		.330
Q13		.474	.119	.171		-.242		.158	.248		-.212		.230	-.251		
Q14	.274	.109	.195	-.267				.154			.216		.214			
Q15	.476				-.244	.193				.118			-.115		-.180	
Q16	.315	-.108	.243	-.270		-.136		.146				-.121	-.127			
Q17	.493	.388		-.206	.216				-.130					-.111		
Q18		.222	-.289	.207		.156	-.109	-.170					.238	.175	.215	
Q19	.329	.122	-.180		.130	.229	-.245	-.103			-.119		.129	.310	.127	
Q20	.234			-.209	.187	-.106		.179					.216	.247	.165	.182
Q21	-.273	.146	-.179			.241	.222		.245	-.114	.165		.187			
Q22	.298											.295	.230	.193	-.210	
Q23	.155	.187	-.272		.197	.133		.219	.109	.113		.118	.142			
Q24	.548		-.125	.153	-.138	.170			.127			.243	.121		-.197	
Q25	.452		.254	-.212						.127		-.131		.139		
Q26	.183	.107	.304	.109	-.243		.180	.214		-.154	-.105				.106	-.157
Q27	.213				-.137	.127	.175		.187				.154		.156	.437
Q28	.123	.130		.186		.179			.162		.221	-.141				-.183
Q29	.165	-.134				.198	.239		.225	.286	.187	.119	.127			
Q30	.243	.384	.136				.109		-.278	.179	.326			-.181		
Q31	.274	-.107	.399				.112			.252			-.125	.310		-.155
Q32	.436	.300	-.111	.104	.168	-.116	-.124				-.200	.188	-.227			.133
Q33	.324	.232		.158				-.265	-.125		-.175	.253		.328		
Q46	-.192	.363	.256	.403	-.182			-.107				-.146				
Q53	.129	.286	.109		.136		-.161	-.116			.225		.110	.214		-.230
AQ34							.219	.183	.143	-.258		.270				-.252
aq34=adjusted aq																
Q35			-.227	.114	-.114			-.217	-.164	-.142		.352		-.146		
Q36		.148				-.162	.157			-.213	-.251	.181		.216	-.196	-.243
AQ37			.312		-.132	-.163	.105		-.177		-.182	.131				
aq37=(q37ab+(in reverse q37cd)+q37ef)																
Q39ABCD	-.151	.244	.148				.150			.253	-.180	-.163	.136	-.139	-.150	
Q40A	.171	-.411	.252	.425	.399				.108		.238	.287	-.290			
Q40B	-.197	.467	-.220	-.456	-.394	.111					-.206	-.252	.235			

Q40C	.169	**-.384**	.243	**.412**	**.424**	.104	-.190	-.115	-.138	**.370**					
Q40D	-.187	**.403**	-.180	**-.399**	**-.372**	-.157	.222	.146	.159	**-.419**	.101				
Q41A	**-.336**	.249	.107	.148	-.115	.166	.125	.212	.134		-.206				
Q41B		-.122		.237	.203	-.168	.170	.227		-.152					
Q41C	-.191	.209	.218	**.266**	-.128		.121	**.395**							
Q42ABD	-.155	**.303**	.197	.169	-.193	.166	-.135		.176		.181	.185	.136		
Q42CE			-.116	**.266**	-.216		-.234				.174		**.358**		
Q43A		.162	**-.335**	**.253**	-.145	.121	.200			-.186					
Q43B	.158		**-.603**	.196	**-.319**	**.254**	**.429**	-.230	.144		.174				
Q43C	.120		**-.545**	.156	**-.317**	**.259**	**.448**	**-.280**	.122	.126	.207				
Q51	.130	.106		.136				**.337**	-.155		-.130	-.184	**.270**		
Q54	.140	.119		-.106	-.202		.143	-.226		.116	.186	**-.270**		-.106	
AITEMS aitems=(q2 + q4 + q13 + q32 +q46)	**.326**	**.593**		**.418**	.162	-.139	-.201	**.278**	-.228	-.152	-.105				
BITEMS bitems=(q7 + q9 + q15 + q24)	**.754**	-.112		.226	**-.305**	**.328**	.104						-.146		
CITEMS citems=(q1 + q3 + q17 + q30)	**.533**	**.588**	.102				-.112	**-.360**		**.296**		-.208			
NAMEID	**-.478**	**.295**	**.314**	.123					.107	.121		-.103		-.128	
CATNUMB			.167		-.177		-.226	-.111	.144		.103	-.163		**.442**	
LESSTHAN number of categories (Parts 1 & 2) labelled less than functionally	**-.360**	.175	.200		**.316**				-.139		-.119		.246	**-.591**	
ABSTRACT	**-.319**		.222		.130	**.506**	**-.306**	**.490**	**-.302**					.130	-.190
NETABST abstract – lessthanabstract				.125	-.104	**.507**	**-.283**	**.484**	**-.315**	.113		.197			**.258**
MATURITY	**-.421**		.201	.171			.245		-.208	.133		-.158			
NACH nAch=achievement motivation	**-.275**	**.314**	.179			.102	.203								.191
NAFFORIG nAfforig=original	-.141	**.320**		-.122	**.331**	**.359**	**.568**			-.220		-.199		.135	
NAFFREV nAffrev=revised	-.160	**.302**		-.170	**.375**	**.379**	**.544**			-.182		-.219		.164	

Extraction Method: Principal Component Analysis.
a 16 components extracted.

PC 44 -- i + 1 adulthood -- 67 variables -- n = 523

(Reduced to n = 511 due to listwise deletion for missing variables)

15 components – 50% of variance

Just like PC 43, except for addition of Q55 (which reduces n to 523).

Table 4-25

Total Variance Explained

	Initial Eigenvalues			Ext. Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	5.853	8.735	8.735	5.853	8.735	8.735
2	3.840	5.732	14.467	3.840	5.732	14.467
3	2.975	4.441	18.908	2.975	4.441	18.908
4	2.681	4.001	22.909	2.681	4.001	22.909
5	2.296	3.426	26.336	2.296	3.426	26.336
6	2.111	3.151	29.487	2.111	3.151	29.487
7	1.911	2.852	32.339	1.911	2.852	32.339
8	1.867	2.786	35.125	1.867	2.786	35.125
9	1.622	2.420	37.545	1.622	2.420	37.545
10	1.576	2.352	39.897	1.576	2.352	39.897
11	1.538	2.296	42.193	1.538	2.296	42.193
12	1.477	2.204	44.397	1.477	2.204	44.397
13	1.389	2.073	46.470	1.389	2.073	46.470
14	1.362	2.033	48.503	1.362	2.033	48.503
15	1.320	1.971	50.474	1.320	1.971	50.474
16	1.269	1.894	52.367			
17	1.188	1.773	54.140			
18	1.164	1.737	55.877			
19	1.145	1.709	57.586			
20	1.104	1.648	59.235			
21	1.096	1.636	60.871			
22	1.056	1.575	62.446			
23	1.027	1.533	63.980			
24	1.004	1.499	65.479			

Extraction Method: Principal Component Analysis.
15 components extracted

Table 4-26

PC 44
Component Matrix

	Component														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Q1	.244	**.412**			.191			.112	-.271		.226	-.109			
Q2	**.424**		**-.378**	.102	.177	-.108						.203	.135	-.239	.182
Q3	.235	**.277**	.219	.184	-.101	-.165	.139					.120	.279		**-.332**
Q4		**.308**			.158	**.296**	**-.294**		**.405**		-.212			.146	.157
Q5	-.213	**.292**	-.102	.145	.202			-.173		-.134	.212		.102	.206	
Q6	**.282**		.116	**-.314**		.130			.224		.127	.106	.136		-.126
Q7	**.489**			**.274**		**-.269**	.160	-.110		-.110		.183		-.199	.123
Q8	**.396**		**.316**	**-.307**	-.187					.113	.110		-.222		
Q9	**.495**	-.114		.103		-.148	.179		**.306**			-.102	.203		
Q10	**-.350**	.213	-.128	**.333**	.229	-.205		-.244			.203				-.153
Q11	.243	-.115	**.351**					.194	.159	**-.343**			.209	.131	
Q12	**.419**		.229				.173				-.136	.122		.151	**-.253**
Q13		**.446**	.161	.127		**.294**	-.208			.115	**-.316**	.166	-.184		
Q14	.230	.107	.209	**-.296**						.164	.131	.243		.242	
Q15	**.489**					-.192	.232			-.100		-.146		-.136	
Q16	**.328**	-.191	**.299**	-.199	-.129	.102			.103				.186		
Q17	**.476**	**.349**		**-.324**	.107			.167							
Q18		**.267**	**-.365**	.168	.123	-.236		-.144		.176	.170			.109	
Q19	**.372**		**-.268**	-.140	.242	-.213	-.143				-.111			.202	
Q20	.205			-.207		.242						.217		.255	
Q21	**-.251**	.208	-.148		.161		**.253**	-.199	.231		.155				-.147
Q22	**.316**	.116		-.145					-.113	-.108	.183		-.215	.220	
Q23	.177	.210	**-.320**	-.138	.165			.184	.243				-.224		
Q24	**.599**		-.131	.157	.101					-.125		-.102	-.275	.175	
Q25	**.407**		.215	-.217	-.145					.162	.188			-.125	.127
Q26	.216	.183	**.326**	.204	-.136		.170	.151	.105		-.114			.174	
Q27	**.285**						.145	-.140	.110			.111		.239	-.181
Q28	.174	.115			.217		.108	-.179	.212		.211	.187		-.183	.205
Q29	.209	-.159					.210	**-.281**	.116	.199			**-.273**	.181	.223
Q30	.241	**.398**	.199				.125		**-.261**	.185	**.272**			-.202	
Q31	**.333**	-.214	**.385**					-.144			.144		.131		**.351**
Q32	**.461**	**.283**	-.116		.137	.118	-.236	.158	-.163	-.111	-.172	-.172			
Q33	**.389**	.226		.136		-.108	-.160		-.204			-.165		.105	.160
Q46		**.346**	**.371**	**.451**				-.178				.171		-.123	.172
Q53	.113	**.283**	.149	-.169	.179		-.161		.134		.125			.143	
AQ34					-.115	.147	.128	.108	**.298**	-.144				.199	
aq34=adjusted aq															
Q35		.168	-.200	.207	.141	-.150			-.196	-.163		-.197	-.191	.171	
Q36		.209			-.190	.141			-.126	**-.399**	-.116				**.300**
AQ37			**.335**	.192	-.157				-.247		-.242			.211	
aq37=(q37ab+(in reverse q37cd)+q37ef)															
Q39ABCD		.231					.123			.173	-.184		**-.296**	-.248	.108
Q40A	.134	**-.440**	.247	.230	**-.434**	**.324**	-.123				.183	**-.419**			
Q40B	-.173	**.484**	-.208	**-.281**	**-.408**	**-.365**					-.167	**.349**			

Q40C	.211	**-.399**	.101	.160	**.448**	**.301**	.134		-.186		-.141	**.298**		-.108	-.208
Q40D	-.241	**.393**		-.189	**-.363**	**-.319**	-.185		.200		.163	**-.376**			.143
Q41A	**-.326**	**.251**	.180	.202					.222		.223		-.239		
Q41B			-.136	-.183	.220			.112	.183	.241	-.142	-.249		-.238	
Q41C	-.152	.174	.242	.249					.124	**.413**		-.162		-.178	
Q42ABD	-.152	**.318**	.236	**.303**	-.106	.123	.178		-.134			-.129		.204	
Q42CE			-.148	**-.256**	.223		**-.264**	.220	.126			.114	.151		-.208
Q43A		.217	**-.271**	**.263**		**.336**					.106	-.106			
Q43B	.119		**-.535**	**.318**	**-.291**	**.424**	.157	.236			**.303**		.129		
Q43C			**-.483**	**.260**	**-.308**	**.406**	.176	**.262**			**.310**	.103	.163		.157
Q51	.186		.104	.140		.122			-.118	.181			**-.323**		
Q54	.116	.146		.172	-.244	.113		.234	.234	-.102			-.215	**-.288**	-.228
AITEMS aitems=(q2 + q4 + q13 + q32 +q46)	**.374**	**.545**		**.306**	.225	.204	**-.362**		.112		-.232	.182			.199
BITEMS bitems=(q7 + q9 + q15 + q24)	**.792**			.235		-.244	**.255**		.185	-.161					
CITEMS citems=(q1 + q3 + q17 + q30)	**.503**	**.601**	.188	-.115	.107			.161	-.272		.229		.124	-.127	-.211
NAMEID	**-.495**	.229	**.308**		.192			.139			.167			-.156	
CATNUMB				.146		-.176		.154	.111	**.368**		-.229	**.291**		.107
LESSTHAN number of categories (Parts 1 & 2) lab. less than functionally	**-.349**	.104	.141	**-.257**	.213	.124		.189		**-.491**	.151	.187	-.230	-.161	.119
ABSTRACT	**-.294**		.124		**.423**	-.175	.269	**.634**				.154	-.133		**.264**
NETABST abstract – lessthan Abstract		-.108		.155	**.298**	**-.299**	**.310**	**.552**		**.366**				.186	.193
MATURITY	**-.434**		**.259**	.237	.128	-.102		.117	**.255**	-.119			.123		
NACH = Achievem't motivation	-.238	**.291**	.161				**.256**								
NAFFORIG nAfforig= Original		**.293**	-.170	**-.317**	.176	.239	**.505**	**-.261**			-.244	-.196	.189		.141
NAFFREV nAffrev= Revised	-.158	**.302**	-.194	**-.368**	.189	.237	**.489**	-.229			-.214	-.166	**.254**		
Q55		-.102			.244	-.225		**-.265**	-.250	.107	.139	.199	.185	.172	.223

Extraction Method: Principal Component Analysis.
15 components extracted.

PC 45 -- $i + 1$ adulthood -- 69 variables -- $n = 378$

(Reduced to $n = 371$ due to listwise deletion for missing variables)

15 components – 50% of variance

All 69 $i + 1$ adulthood variables & thus n reduced further to 378.

Table 4-27

Total Variance Explained

	Initial Eigenvalues			Ext. Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	6.130	8.884	8.884	6.130	8.884	8.884
2	3.765	5.457	14.341	3.765	5.457	14.341
3	2.889	4.187	18.528	2.889	4.187	18.528
4	2.767	4.010	22.538	2.767	4.010	22.538
5	2.368	3.432	25.970	2.368	3.432	25.970
6	2.064	2.991	28.961	2.064	2.991	28.961
7	1.996	2.893	31.854	1.996	2.893	31.854
8	1.817	2.634	34.487	1.817	2.634	34.487
9	1.741	2.523	37.010	1.741	2.523	37.010
10	1.678	2.432	39.442	1.678	2.432	39.442
11	1.626	2.356	41.798	1.626	2.356	41.798
12	1.589	2.303	44.100	1.589	2.303	44.100
13	1.528	2.215	46.315	1.528	2.215	46.315
14	1.398	2.026	48.341	1.398	2.026	48.341
15	1.353	1.960	50.301	1.353	1.960	50.301
16	1.311	1.901	52.202			
17	1.279	1.854	54.056			
18	1.258	1.823	55.879			
19	1.193	1.728	57.607			
20	1.173	1.699	59.307			
21	1.134	1.644	60.950			
22	1.084	1.571	62.521			
23	1.070	1.550	64.071			
24	1.049	1.520	65.592			
25	1.010	1.463	67.055			

Extraction Method: Principal Component Analysis.

Table 4-28

PC 45
Component Matrix

	Component														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Q1	.306	.380	.131	.139		-.128			-.246			-.133			
Q2	.356		-.245		.231	-.134		-.204	.197		-.356	.208		.196	
Q3	.334	.168	.291	-.129	-.196						-.105		-.333	.263	
Q4		.322			.190		-.410	.145	.293	-.118		.256			.132
Q5		.310			.252					.218		-.192	-.328	-.180	.162
Q6	.286			.366		.234	-.168	.184		.156			-.269	.131	
Q7	.506			-.218			.193		.265		-.234				
Q8	.406	-.107		.288	-.285	.101					.192	.117	.150		
Q9	.531	-.174					.115	.191	.310	.134					.104
Q10	-.289	.192	.236	-.193	.294		.208	-.199	.118	.180			-.249	-.153	-.134
Q11	.278	-.207	.219		-.131			.222	.204	.141	-.127	-.214		.113	
Q12	.462		.148			.225					.118		-.126	.243	-.137
Q13		.296	.300	-.135	.104	.146	-.408			-.302		.133			-.203
Q14	.200			.306	-.218	.249			-.177			.108			
Q15	.482				-.119		.236		.126						-.116
Q16	.294	-.284		.248	-.227		-.128	.126				.169			.116
Q17	.467	.363		.289		-.132		.111	-.140						
Q18		.372		-.163	.133	-.121	.170		-.167			.160		-.234	
Q19	.346	.174	-.158	.197	.198	-.279				-.168					
Q20	.237			.286		.250	-.190		-.159		-.120			-.200	
Q21	-.226	.258				.229	.220		.103		.102		-.127		-.186
Q22	.350	.162		.169	.110				-.152		.151	-.121	.120		-.139
Q23	.192	.333	-.231	.103	.184			.230			.162	.124		-.198	-.186
Q24	.574			-.105	.216		.141			.149	.188				-.285
Q25	.379	-.178		.261	-.211				-.205			.117	.232		
Q26	.359		.224	-.164	-.157			.188			.109	-.162			.182
Q27	.296					.272	.127			-.112	.206		-.220	-.118	-.156
Q28	.180		.125		.196		.147		.233	.166	-.166	.115		-.414	.135
Q29	.205	-.157		.127	.101	.249	.172	-.185			.163	.282	.139	-.197	
Q30	.324	.261	.190				.129		-.391					-.177	
Q31	.345	-.406	.130	.203				-.105				.108	.177		.253
Q32	.475	.219			.251	-.236	-.191				.116	-.152	.160	.177	
Q33	.456	.115				-.253		-.168				-.177	.207		.104
Q46	.117		.585	-.258				-.158			-.227	.113			.141
Q53	.134	.167	.249	.266	.112	-.111						.110		-.220	.272
AQ34			-.126			.141		.283	.231		.102	-.179		-.112	.235
Q35		.266		-.237	.266	-.206	.130				.107	-.174	.268		
Q36		.175		-.165			-.142		.182		-.196	-.271	.292		.233
AQ37		-.123	.237	-.270		.113	-.107		-.132	-.165	.113	-.259		.120	
Q39		.153	.115			.144				-.271		.107	.350	-.132	
Q40A		-.520	.218		.492		-.172			.297	.325				.113
Q40B	-.111	.567	-.149		-.509		.161		.113	-.265	-.257				-.125
Q40C	.105	-.449	.110		.514	.307		.101	-.149	-.233	-.222	-.159	-.107		
Q40D	-.136	.456			-.477	-.342		-.129	.176	.255	.283	.162		.126	
Q41A	-.239	.187	.379	-.121	-.155	.158				.287	.129	.221	.105		-.151
Q41B			-.114	.206	.179	-.142		.225		-.213	.326	.243			

Q41C			.346	-.210						-.241	.267	.284			
Q42ABD		.193	.337	-.347		.234			-.184		.223	-.208			
Q42CE		.138		.280	.159	-.170	-.171	.184				.102	-.263	.332	-.188
Q43A		.251	-.154	-.342	.124	.124	-.117			.226	.173	.228		.288	
Q43B	.106		-.461	-.531		.239		.182	-.332	.293	-.118	.225			.112
Q43C			-.456	-.464		.233		.200	-.344	.277	-.220	.212			.169
Q51	.238			-.181		.171				-.243	.105		.243		-.142
Q54	.155			-.243	-.141		-.209	.334					.118	-.248	-.249
AITEMS	.485	.380	.259	-.186	.307		-.378		.207	-.179	-.213	.205		.114	
BITEMS	.806	-.152		-.143			.261		.293	.130					-.129
CITEMS	.592	.488	.236	.164			.107		-.352				-.133		
NAMEID	-.495	.166	.382	.126				.129		.243			.146		
CATNUMB			.240	-.154		-.237	.197			-.170	.106	.237	-.110	.167	.320
LESSTHAN	-.365	.190	.165	.310	.109		-.164	.167		.315	-.242	-.134	.327		-.300
ABSTRACT	-.306		.217	.204	.204		.400	.580			-.223		.239		
NETABST			.100		.136	-.101	.593	.509		-.260		.145			.149
MATURITY	-.410		.390					.218	.141	.222				.133	
nAch	-.141	.240	.120	.183		.272	.105			-.132	.126				
nAfforig		.360	-.257	.187	.142	.516	.128	-.118	.186				.279	.240	.205
nAffrev=	-.146	.408	-.281	.224	.150	.501	.125		.201				.138	.224	.190
Q55	-.112		.189	.186	.156		.201	-.373			-.273			.159	
Q56		-.141	.269	-.164		.106	.150	-.118			-.133		.126	.168	-.208
Q57	-.200			.145			.131	-.157		.111	-.136	.379	.181	.182	

Extraction Method: Principal Component Analysis.
15 components extracted.

Correlation Analyses

Table 4-29

PC 31	with	PC 36
i childhood		*i* adulthood
$n = 132$		$n = 132$
(Reduced by listwise deletion to $n = 131$)		(No reduction: no missing values)
41 variables – 4 components (54% of var.)		60 variables – 11 components (53% of var.)

(This is the only correlation/comparison possible between *i* childhood and *i* adulthood subjects and variables)

	1_31	2_31	3_31	4_31
1_36	NS	NS	NS	NS
2_36	NS	NS	NS	.353 (.000)
3_36	NS	NS	NS	NS
4_36	NS	NS	NS	NS
5_36	NS	NS	.277 (.001)	NS
6_36	NS	NS	NS	NS
7_36	NS	NS	NS	NS
8_36	NS	NS	NS	NS
9_36	NS	NS	NS	NS
10_36	NS	NS	NS	NS
11_36	NS	NS	NS	NS

Table 4-30

PC 32	with	PC 45
i +1 childhood		*i* +1 adulthood
n = 378		*n* = 378
(Reduced by listwise deletion to *n* = 288)		(Reduced by listwise deletion to *n* = 371)
42 variables – 4 components (51% of var.)		69 variables – 15 components (55% of var.)

(This analysis focuses upon the maximum number of variables, which obliges a drastic reduction in subjects – to "final third," or 378 subjects. There is then a further significant reduction for listwise deletion due to missing variables, as this includes 100 subjects tested in Berlin, where the responses as to parental SES, for instance, were severely curtailed due to governmental restrictions.)

	1_32	2_32	3_32	4_32
1_45	[.182 (.002)]	-.270 (.000)	NS	.194 (.001)
2_45	NS	NS	NS	NS
3_45	NS	NS	NS	NS
4_45	NS	.213 (.000)	NS	NS
5_45	NS	NS	NS	NS
6_45	NS	NS	NS	NS
7_45	NS	NS	NS	NS
8_45	NS	NS	NS	NS
9_45	NS	NS	NS	NS
10_45	NS	NS	NS	NS
11_45	NS	NS	NS	NS
12_45	NS	NS	NS	NS
13_45	NS	NS	NS	NS
14_45	NS	NS	NS	NS
15_45	NS	NS	NS	NS

Table 4-31

PC 35	with	PC 43
$i+1$ childhood		$i+1$ adulthood
$N = 1158$		$n = 775$
(Reduced by listwise deletion to $n = 1014$)		(Reduced by listwise deletion to $n = 775$)
41 variables – 7 components (52% of var.)		66 variables – 16 components (51% of var.)

(Here a few variables are sacrificed, compared to the previous correlation analysis, which permits an increase of subjects on both the childhood and the adulthood side to be included in the analysis.)

	1_35	2_35	3_35	4_35	5_35	6_35	7_35
1_43	-.240 (.000)	.245 (.000)	-.131 (.001)	.258 (.000)	-.232 (.000)	NS	NS
2_43	NS	-.139 (.000)	NS	-.176 (.000)	.276 (.000)	NS	NS
3_43	NS	NS	NS	-.257 (.000)	NS	NS	NS
4_43	NS	NS	NS	-.177 (.000)	.142 (.000)	NS	NS
5_43	NS	NS	NS	NS	-.146 (.000)	NS	NS
6_43	NS	NS	NS	NS	NS	NS	NS
7_43	NS	NS	NS	NS	NS	NS	NS
8_43	NS	NS	NS	NS	NS	NS	NS
9_43	NS	NS	NS	NS	NS	.143 (.000)	NS
10_43	NS	NS	NS	NS	NS	NS	-.223 (.000)
11_43	NS	NS	NS	NS	NS	NS	NS
12_43	NS	NS	NS	NS	NS	NS	NS
13_43	NS	NS	NS	NS	NS	NS	NS
14_43	NS	NS	NS	NS	NS	-.127 (.000)	NS
15_43	NS	NS	NS	NS	NS	NS	NS
16_43	NS	NS	NS	NS	NS	NS	NS

Table 4-32

PC 35	with	PC 41
$i+1$ childhood		$i+1$ adulthood
$N = 1158$		$N = 1158$
(Reduced by listwise deletion to $n = 1014$)		(Reduced by listwise deletion to $n = 1136$)
41 variables – 7 components (52% of var.)		63 variables – 16 components (51% of var.)

(Dropping three more variables [the three motivation scores, tabulated on only 791 subjects] permits increasing the subject base included in the analysis to the maximum number of $N = 1158$. This renders the most robust of the developmental analyses, showing a maximum number of significant correlations.)

	1_35	2_35	3_35	4_35	5_35	6_35	7_35
1_41	-.246 (.000)	.200 (.000)	NS	.288 (.000)	-.306 (.000)	NS	NS
2_41	NS	-.159 (.000)	.108 (.001)	-.208 (.000)	.238 (.000)	NS	NS
3_41	NS	-.118 (.000)	.125 (.000)	-.243 (.000)	NS	-.258 (.000)	-.103 (.001)
4_41	NS	NS	NS	-.106 (.001)	.112 (.000)	NS	NS
5_41	NS	NS	NS	NS	NS	NS	NS
6_41	NS	NS	NS	[.100 (.002)]	NS	NS	NS
7_41	NS	NS	NS	NS	[.100 (.002)]	NS	NS
8_41	NS	NS	NS	NS	NS	NS	NS
9_41	NS	NS	NS	NS	[.098 (.002)]	NS	NS
10_41	NS	NS	NS	NS	NS	NS	.214 (.000)
11_41	NS	NS	NS	NS	NS	NS	NS
12_41	NS	NS	NS	NS	NS	NS	NS
13_41	NS	NS	NS	NS	NS	-.105 (.001)	NS
14_41	NS	NS	NS	NS	NS	NS	NS
15_41	NS	NS	[.096 (.002)]	NS	NS	NS	NS
16_41	NS	NS	NS	NS	NS	NS	NS

Table 4-33

PC 31	with	PC 33
i childhood		*i* + 1 childhood
n = 132		*n* = 132
(Reduced by listwise deletion to *n* = 131)		(Reduced by listwise deletion to *n* = 129)
41 variables – 4 components (54% of variance)		42 variables – 4 components (53% of variance)

(Here one variable had to be sacrificed on the *i*-generation side [reducing the 42 to 41 on that side]: There was no variance on item Q45B on the *i* side, because not a single parent declared having had access to computers during the *parent's* childhood.)

	1_31	2_31	3_31	4_31
1_33	.414 (.000)	NS	NS	NS
2_33	NS	NS	.447 (.000)	NS
3_33	NS	NS	[.239 (.006)]	NS
4_33	NS	NS	NS	NS

Table 4-34

PC 31	with	PC 34
i childhood		*i* + 1 childhood
$n = 132$		$N = 1158$
(Reduced by listwise deletion to $n = 131$)		(Reduced by listwise deletion to $n = 1047$)
41 variables – 4 components (54% of variance)		37 variables – 6 components (52% of variance)

(Dropping five variables [with many missing items] on the *i* + 1 childhood side permits the inclusion of all 1158 subjects on that side; although this is then reduced by listwise deletion to $n = 1047$.)

	1_31	2_31	3_31	4_31
1_34	NS	NS	.274 (.002)	NS
2_34	.284 (.001)	NS	NS	NS
3_34	NS	NS	.289 (.000)]	NS
4_34	NS	NS	NS	NS
5_34	NS	NS	NS	.273 (.002)
6_34	NS	NS	NS	NS

Table 4-35

PC 36	with	PC 38
i adulthood		*i* + 1 adulthood
n = 132		*n* = 132
(No reduction: no missing values)		(No reduction: no missing values)
60 variables – 11 components (53% of var.)		60 variables – 12 components (52% of var.)

(This is an analysis of all those adults in both generations on whom there obtain both parental (*i*) and offsping (*i* + 1) data, and includes the same variables on both sides [although the number of components is not identical].)

	1_36	2_36	3_36	4_36	5_36	6_36	7_36	8_36	9_36	10_36	11_36
1_38	.406[a]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2_38	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-.289[b]
3_38	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
4_38	NS	.313[a]	NS	NS	NS	NS	NS	NS	NS	NS	NS
5_38	NS	.336[a]	NS	NS	NS	NS	NS	NS	NS	NS	NS
6_38	NS	NS	NS	-.285[b]	NS	NS	NS	NS	NS	NS	NS
7_38	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
8_38	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
9_38	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10_38	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11_38	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
12_38	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

[a] = significant (.000)

[b] = not significant (borderline) (.001)

Table 4-36

PC 36	with	PC 40
i adulthood		*i* + 1 adulthood
N = 132		*N* = 1158
(No reduction: no missing values)		(No reduction: no missing values)
60 variables – 11 components (53% of var.)		57 variables – 15 components (51% of var.)

(In the familiar trade-off, increasing the *i* + 1 side to include all subjects, obliges a drop of 3 variables.)

	1_36	2_36	3_36	4_36	5_36	6_36	7_36	8_36	9_36	10_36	11_36
1_40	.402[a]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2_40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
3_40	NS	NS	.311[a]	NS	NS	NS	NS	NS	NS	NS	NS
4_40	NS	.310[a]	NS	NS	NS	NS	NS	NS	NS	NS	NS
5_40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
6_40	.290[b]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
7_40	NS	NS	-.278[b]	NS	NS	NS	NS	NS	NS	NS	NS
8_40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
9_40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10_40	NS	NS	NS	.286[b]	NS	NS	NS	NS	NS	NS	NS
11_40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
12_40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
13_40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
14_40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
15_40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

[a] = significant (.000)

[b] = not significant (borderline) (.001)

Table 4-37

PC 36	with	PC 33
i adulthood		*i* + 1 childhood
n = 132		*n* = 132
(No reduction: no missing values)		(No reduction: no missing values)
60 variables – 11 components (53% of var.)		42 variables – 4 components (53% of var.)

(This analysis addresses the extent of similarity between adults and their biological children.)

	1_36	2_36	3_36	4_36	5_36	6_36	7_36	8_36	9_36	10_36	11_36
1_33	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2_33	NS	NS	NS	.263[b]	NS	NS	NS	NS	NS	NS	NS
3_33	NS	-.404[a]	NS	NS	NS	NS	NS	NS	NS	NS	NS
4_33	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

[a] = significant (.000)

[b] = not significant (borderline) (.001)

Table 4-38

PC 33	with	PC 34
$i + 1$ childhood		$i + 1$ childhood
$n = 132$		$N = 1158$
(reduced to $n = 129$ by listwise deletion)		(reduced to $n = 1047$ by listwise deletion)
42 variables – 4 components (53% of var.)		37 variables – 6 components (52% of variance)

	1_33	2_33	3_33	4_33
1_34	NS	NS	.919 (.000)	NS
2_34	.789 (.000)	-.368 (.000)	NS	NS
3_34	.412 (.000)	.767 (.000)	NS	NS
4_34	NS	.301 (.001)	-.365 (.000)	.769 (.000)
5_34	NS	NS	-.343 (.000)	.264 (.002)
6_34	NS	.269 (.002)	NS	.250 (.004)

Table 4-39

PC 38						with	PC 41					
i + 1 adulthood							*i* + 1 adulthood					
n = 132							*N* = 1158					
(No reduction: no missing values)							(Reduced to *n* = 1136 by listwise deletion)					
60 variables – 12 components (52% of var.)							63 variables – 16 components (51% of variance)					
	1_38	2_38	3_38	4_38	5_38	6_38	7_38	8_38	9_38	10_38	11_38	12_38
1_41	.970[a]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2_41	NS	.813[a]	.337[a]	NS	.362[a]	NS	NS	NS	NS	NS	NS	NS
3_41	NS	NS	.279[b]	.754[a]	NS	NS	NS	NS	NS	NS	NS	NS
4_41	NS	NS	NS	NS	.641[a]	-.550[a]	NS	NS	NS	NS	NS	NS
5_41	.278[b]	.336[a]	-.476[a]	.546[a]	NS	NS	NS	-.296[b]	NS	NS	NS	NS
6_41	NS	NS	.623[a]	NS	-.375[a]	NS	NS	NS	NS	NS	NS	NS
7_41	NS	NS	-437[a]	-.430[a]	.362[a]	NS	NS	NS	.274[b]	NS	NS	NS
8_41	NS	NS	NS	NS	NS	-.564[a]	.438[a]	NS	NS	NS	NS	NS
9_41	NS	NS	.470[a]	.391[a]	NS	NS	.346[a]	NS	.382[a]	NS	NS	NS
10_41	NS	NS	NS	NS	NS	NS	NS	.474[a]	NS	NS	NS	Ns
11_41	NS	NS	-.277[b]	NS	NS	NS	NS	NS	NS	.276[b]	NS	NS
12_41	NS	NS	NS	NS	NS	NS	NS	-.475[a]	NS	NS	.309[a]	-.416[a]
13_41	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
14_41	NS	NS	NS	NS	NS	NS	NS	NS	.444[a]	-.348[a]	NS	-.297[b]
15_41	NS	NS	NS	.290[b]	NS	NS	.348[a]	NS	NS	NS	NS	NS
16_41	NS	NS	NS	NS	NS	NS	.410[a]	NS	NS	NS	NS	NS

[a] = significant (.000)

[b] = not significant (borderline) (.001)

Table 4-40

Using "upper, middle, and lower" thirds on a composite index of vertical (parwrit) vs. horizontal (peertel) cultural transmission derived from $i + 1$ generation scores

From Paired-Sample Statistics (by SPSS-10) (On the variables used in deriving PC 31, PC 33, PC36, PC38)

CHILDHOOD	*Correlations (2-tailed)*		*Differences*	
Lower third	1	(n = 44)	6	(df = 43)
Middle third	4	(n = 44)	6	(df = 43)
Highest third	5	(n = 44)	4	(df = 43)
ADULTHOOD				
Lower third	0	(n = 44)	7	(df = 43)
Middle third	0	(n = 44)	3	(df = 43)
Highest third	2	(n = 44)	6	(df = 43)

Table 4-41

Using "upper, middle, and lower" thirds on a composite index of vertical (parwrit) vs. horizontal (peertel) cultural transmission derived from i generation scores

From Paired-Sample Statistics (by SPSS-10) (On the variables used in deriving PC 31, PC 33, PC36, PC38)

CHILDHOOD		*Correlations (2-tailed)*	*Differences*	
Lower third	3	(n = 44)	4	(df = 43)
Middle third	4	(n = 44)	5	(df = 43)
Highest third	5	(n = 44)	7	(df = 43)
ADULTHOOD				
Lower third	1	(n = 44)	8	(df = 43)
Middle third	3	(n = 44)	6	(df = 43)
Highest third	4	(n = 44)	6	(df = 43)

NB: For the GLM/MANOVAS corresponding to the two above tables, see the two parts of Table 4-42, corresponding to the first and final parts of Appendix XI, below, respectively.

Cross-Temporal Differences

Focus in the table below is upon the sets of data obtained from the pupil ($i+1$) and adulthood (i) data obtained in the present study. This is then followed (pp. 151 ff.) by a comparison of the findings of this study, with those of prior studies on a subset of items, called the "McClelland items."

Table 4-43

SPECIFIC "CHILDHOOD" INDICES ON WHICH THERE APPEAR SIGNIFICANT DIFFERENCES BETWEEN THE TWO GENERATIONS

(by paired-sample statistics in SPSS-10)

($t > 3.5$, 2-tailed sig. > .05 adjusted by "modified/sequential Bonferroni" test. Test for differences is between i and $i+1_{n=132}$ subsamples only. $i+1_{n=1158}$ [bracketed] data are only shown for illustrative purposes. n in each case as indicated)

Variables (Total of 32)	*t*	*Mean i*	*Mean i + 1 n=132*	*% inc./(decr.) of shift*	*[Mean] i + 1 n=1158*	*[% inc./(decr.)] of shift*
13 CHILDHOOD INDICES						
Mobility (relocation since birth)	-5.2	.61	.32	(48%)	[.29]	[(52%)]
Parental S.E.S.	5.7	3.4	4.0	18%	[4.2]	[24%]
Total paternal presence	-4.8	4.5	3.7	(18%)	[4.3]	[(9%)]
Total no. of sibs present at 1	-5.6	2.0	0.9	(55%)	$[0.8]_{n=378}$	[(60%)]
Total no. of sibs present at 2	-6.6	2.5	1.1	(56%)	$[1.1]_{n=378}$	[(56%)]
Total no. of sibs present at 5	-7.4	3.0	1.4	(53%)	$[1.4]_{n=378}$	[(53%)]
Total no. of sibs present at 10	-8.0	3.3	1.4	(58%)	$[1.5]_{n=378}$	[(55%)]
Total no. of sibs present at 15	-8.1	3.3	1.3	(61%)	$[1.4]_{n=378}$	[(58%)]
Q38ab (fairy tales told by parents)	5.2	30.2	57.6	91%	[52.6]	[74%]
Q38ef (films on fairy tales seen)	3.6	14.3	29.0	103%	[17.2]	[20%]
Q44 (sleepovers)	3.7	11.1	21.3	93%	[15.0]	[35%]
Q45A (watching TV)	5.0	.32	.47	47%	[.41]	[28%]
Q45G (reading)	-4.2	.44	.30	(32%)	[.36]	[(18%)]

Table 4 - 44

SPECIFIC "ADULTHOOD" INDICES ON WHICH THERE APPEAR SIGNIFICANT DIFFERENCES BETWEEN THE TWO GENERATIONS

(by paired-sample statistics in SPSS-10)

(t > 3.5, 2-tailed sig. > .05 adjusted by "modified/sequential Bonferroni" test – test for differences is between i and $i + 1_{n=132}$ subsamples only. $i + 1_{n=1158}$ [bracketed] data are only shown for illustrative purposes. n in each case as indicated)

Variables (Total of 32)	t	Mean i	Mean $i + 1_{n=132}$	% inc./(decr.) of shift	*[Mean]* $i + 1_{n=1158}$	*[% inc./(decr.)]* of shift
19 ADULTHOOD INDICES						
Q2 ("...the wise person lives for today")	6.3	2.7	4.0	48%	[3.5]	[30%]
Q6 ("...why doesn't [a laborer] do better")	5.8	3.3	4.4	33%	[3.6]	[9%]
Q7 ("...plans hardly ever work work out")	4.3	2.0	2.8	40%	[2.6]	[30%]
Q10 ("Homosexuals have equal rights...")	4.0	4.0	4.8	20%	[5.3]	[32%]
Q11 ("... behave as if you didn't care")	3.7	1.8	2.5	39%	[2.5]	[39%]
Q15 ("[the famous needn't be] considerate")	3.9	1.7	2.4	41%	[2.2]	[29%]
Q21 ("Sometimes I feel like crying ...")	-3.5	5.8	5.2	(10%)	[5.2]	[(10%)]
Q24 ("when born ... already in the cards")	5.0	1.5	2.3	53%	[2.0]	[33%]
Q28 ("... the masses are behind their time")	4.3	3.5	4.4	26%	[5.4]	[54%]
Q33 ("simple language ... even if less ...")	-3.9	4.2	3.5	(24%)	[3.7]	[(12%)]
AQ34 (does not like being in a large group)	-5.5	2.8	2.4	(14%)	[2.4]	[(14%)]
Q36 (some things should be kept private)	-4.5	3.0	2.7	(10%)	[2.8]	[(7%)]
Q39 (formality on telephone w. strangers)	-6.5	3.1	2.4	(23%)	[2.7]	[(13%)]
Q41A (prefers individ. & 1-on-1activities)	-3.7	2.2	1.5	(32%)	[1.8]	[(18%)]
Q41B (preference for group activities)	6.0	1.0	1.8	80%	[1.6]	[60%]
Q42ABD (formal vs. familiar self-identif.)	-5.6	8.3	5.8	(30%)	[7.4]	[(11%)]
Q42CE (addressing drs./clergy formally)	-12.5	10.2	5.1	(50%)	[4.7]	[(54%)]
A-items (conscious striving)	5.3	19.3	22.2	15%	[22.3]	[16%]
B-items ("c'est la vie")	6.8	7.8	10.8	38%	[9.7]	[24%]

[Q51 through Q57 indicate a general shift toward egalitarianism/peers & away from hierarchy/elders, which fails to reach the significance level set for this analysis, however. There is one exception to the shifting pattern: Q56, where a majority in both generations holds that parents should be their children's models and educators, rather than friends and buddies.]

Table 4-45

SPECIFIC INDICES SHOWING HIGH CONCORDANCE BETWEEN THE TWO GENERATIONS i AND $i + 1$ ($n = 132$ for both generations)

(by paired-sample/correlation statistics in SPSS-10)

High concordance (Pearson *r*; 2-tailed sig. > .05 adjusted by "modified/sequential Bonferroni")		
Variables (total of 11)		*r*
Childhood indices:	Country of birth	.97
	Mobile (degree of relocation during lifetime)	.73
	Total number of languages spoken	.52
	Parental S.E.S.	.45
	Rural-urban index (of place of birth)	.42
	Total grandmaternal presence	.39
	Total grandpaternal presence	.34
	Total number of siblings at age of 5*	.32
Adulthood indices:	Q10 ("Homosexuals have equal rights ...")	.42
	B-items ("c'est la vie," no sense fighting fate)	.38
	Q56 ("Should parents be ... models/or friends")	.32

* In the case of siblings, high concordance was only at the age of 5, not at other ages.

Table 4-46

"The 22 McClelland" items. Focus upon the differences between the data of this study, and the findings of prior studies.

#	Description	1950s Europ. *N*= 87	1950s USA *n*=74	91-93 Europ. *N*=70	91-93 USA *n*=70	96-99 Europ. *i* *n*=32	96-99 USA *i* *n*=100	96-99 Europ. *i* + 1 *n*=805	96-99 USA *i*+ 1 *n*=353
	A-items:								
2	Nowadays with world ...	2.11	2.54	2.63	2.16	2.83	2.65	3.16	4.22
4	I set difficult goals ...	5.36	5.65	4.70	5.74	4.81	5.11	5.04	5.52
13	I work like a slave ...	4.73	4.23	4.87	3.81	4.91	4.78	4.99	4.15
32	Respect is due an older ...	4.18	4.51	3.49	3.27	3.70	3.54	3.80	4.32
46	A child should never be ...	5.12	3.50	5.62	4.28	5.37	3.30	5.53	3.61
	B-items:								
7	Planning only makes ...	2.28	1.97	2.36	2.39	2.06	1.98	2.41	2.95
9	There is no such thing ...	2.76	2.96	2.43	3.14	2.05	2.80	2.60	3.75
15	Some people ... forgiven	2.28	2.03	1.90	2.10	1.75	1.74	1.97	2.61
24	When a man is born ...	1.71	1.43	1.41	1.62	1.50	1.48	1.78	2.59
	C-items:								
1	No sane... hurt ... friend	4.73	5.49	5.09	4.61	5.23	5.40	4.80	4.92
3	It is better to go without ..	4.88	3.28	2.91	2.81	2.66	3.48	3.05	2.83
17	... respect for ... parents.	5.95	5.39	3.68	3.69	3.27	4.19	3.93	4.71
30	A man with money ...	5.33	3.76	4.70	3.40	4.23	3.71	4.84	4.41
	Miscellaneous items:								
6	...why doesn't do better ..	4.09	4.72	3.63	4.21	2.52	3.56	3.19	4.67
11	... hide what you feel.	4.92	3.09	2.67	2.83	1.67	1.90	2.53	2.53
20	... clock off by several ...	2.85	4.95	3.54	3.51	3.70	3.50	3.55	4.06
27	... political opinion easily	2.15	2.84	2.37	2.73	2.48	2.26	2.65	2.81

53	...lacks the companion...	5.13	3.62	5.38	4.74	4.38	4.57	5.09	5.18
40	a: preference f. egocentric	1.40	1.80	1.23	1.54	1.38	1.38	1.22	1.40
40	b: preference f. sociocentr	1.30	1.00	1.70	1.47	1.50	1.56	1.72	1.95
41	a: pref. f. indiv. & 1-on-1	2.33	1.45	2.50	1.81	2.39	2.12	2.07	1.12
41	b: pref. f. group activ's	1.45	5.18	0.87	2.36	0.92	0.98	1.42	1.95
	n-Achievement motivat.	2.70	4.69	1.34	1.74	N/A	N/A	2.61	-1.28
	n-Affiliation/original	5.48	5.34	3.97	5.63	N/A	N/A	3.51	2.84

Findings related to ancillary hypotheses 8 and 9, and correlations of key specific indices

LEGEND FOR FOLLOWING TABLES

VARIABLES CONCERNED WITH CHILDHOD ACTIVITIES & CHARACTERISTICS

HIG = parental SES (highest)
KIN = calibre of school (kindval)
TOT = total number of languages
38A = no. of fairy t's heard
38C = no. of fairy t's read on own
PC = Picture completion subtest of WAIS-R
Rod = Rod & Frame field dependence/indep. test
TOTSIB01, etc. = Number of sibs at age 1, etc.
38E = no. of fairy t's seen (films)
45A = Amount of time watching TV/videos
45C = Amount of time w.homework/studying
45D = Amount of time at home
45E = Amount of time on telephone
45G= Amount of time reading
44 = Number of sleepovers annually
TOTPARE = aggregate parental presence

VARIABLES CONCERNED WITH ADULTHOOD ACTIVITIES & ATTITUDES/BELIEFS

Q1 = wrong to hurt a friend's feelings
Q2 = with world as it is, live for today
Q4 = "I set difficult goals for myself..."
Q5 = husbands/wives should have same chores
Q7 = "...plans hardly ever work out anyway"
Q8 = many foreign immigrants are uncivilized
Q9 = no such thing as permanent friendship
Q10= "Homosexuals have equal rights ..."
Q13= I work until satisfied with results
Q14= "Taxes" rise because of freeloaders
Q16= Restrict public contacts of those HIV+
Q17= "...love, gratitude & repect for parent"
Q25= "criminals ... sh'be hung from lampposts"
Q31= better to be rich than educated
Q32= Respect elders "no matter what"
Q33= use simple language even if not precise
Q39= familiar vs. formal address of strangers
41A/B= pref. for indiv./1-on-1 over group activ's
41C= a lot of "amorphous" activities
42ABD = level of formality in self-presentation
42CE level of formality in addressing drs., clergy
43A= a lot of writing to friends/relatives
43B= a lot of telephoning friends/relatives
Q46= always explain to a child reasons for requests
NAM= erudition, knowledgeabity
MAT= maturity
ABS = index of ability for abstract thinking
N-Ach = achievement motivation (from TAT's)

Table 4-47

Correlations of some key variables with presence of siblings at specific childhood ages

and with aggregate parental presence)

Partial correlation coefficients (by SPSS-10): Controlling for "country of birth," "rural/urban,"& "gender."

(Coefficient/(D.F.)/2-tailed significance, α = .05 adjusted by modified sequential Bonferroni test)

Variable	TOTSIB01	TOTSIB02	TOTSIB05	TOTSIB10	TOTSIB15	TOTPARE
PC	NS	NS	NS	NS	NS	.11/(1103)/ .000
ROD	NS	NS	NS	NS	NS	-.12/(1103)/ .000
NAM	-.21/(372)/ .000	-.20/(372)/ .000	-.17/(372)/ .001	-.17/(372)/ .001	-.16/(372)/ .002	.23/(1151)/ .000
MAT	-.16/(371)/ .002	-.19/(371)/ .000	[-.13/(371)/ .014]	NS	NS	.13/(1151)/ .000
N-ACH	NS	NS	NS	NS	NS	.20/(786)/ .000
N-AFFORI	NS	NS	[-.15/(373)/ .005]	-.16/(373)/ .002	[-.15/(373)/ .004]	NS
41A	NS	NS	NS	NS	NS	.13/(1151)/ .000
43A	NS	.19/(373)/ .000	[.12/(373)/ .017]	NS	NS	-.11(1152)/ .000

A similar analysis was run on "eldon" (eldest or only child) and no significant correlations emerged.

Table 4-48

Standard deviations from respective means of those (adults) "low" versus those "high" on family centeredness" in their childhood (n = 66 in each category; median as divider).

Q-items	*i* generation			*i* + 1 generation		
	lows (mdn=-1)		highs (mdn=+1)	lows (mdn=-1)		highs (mdn=+1)
Q 1 (AQ1B)	1.88	>	1.60	1.93	>	1.80
Q 2 (etc.)	1.99	>	1.59	1.98	>	1.85
Q 3	1.82	>	1.65	1.99	>	1.76
Q 4	1.61	<	1.68	1.50	>	1.45
Q 5	1.22	<	1.56	1.53	<	1.54
Q 6	1.65	<	1.76	1.95	>	1.70
Q 7	1.44	>	1.28	1.95	>	1.48
Q 8	1.68	<	1.84	2.25	>	1.82
Q 9	1.82	<	1.85	2.11	>	1.95
Q10	2.36	>	2.31	2.15	>	2.12
Q11	1.36	>	.93	1.90	>	1.52
Q12	1.93	>	1.61	2.22	>	1.96
Q13	1.45	<	1.55	1.76	>	1.74
Q14	1.80	=	1.80	1.71	>	1.46
Q15	1.29	<	1.38	1.91	>	1.74
Q16	1.83	>	1.64	1.93	>	1.68
Q17	2.22	>	1.81	1.86	<	1.98
Q18	1.50	>	1.47	1.23	<	1.47
Q19	1.48	>	1.46	1.55	<	1.63
Q20	2.09	>	1.87	2.09	<	2.25
Q21	1.89	>	1.38	2.02	>	1.73
Q22	1.73	>	1.59	1.71	<	1.84
Q23	1.40	<	1.42	1.45	<	1.63
Q24	1.33	>	.76	1.93	>	1.45
Q25	1.66	<	1.96	2.34	>	2.06
Q26	1.71	>	1.67	1.87	>	1.80
Q27	1.36	>	1.29	2.02	>	1.67
Q28	1.80	>	1.57	1.75	>	1.74
Q29	1.90	>	1.71	1.83	>	1.62
Q30	2.12	>	1.92	1.86	<	2.13
Q31	1.07	>	1.04	1.63	>	1.58
Q32	2.16	>	1.97	2.27	>	2.20
Q33	1.87	>	1.69	1.70	=	1.70
Q46	2.12	>	1.80	2.08	=	2.08
Q53	2.03	>	2.02	1.95	>	1.90
AQ34	.47	>	.36	.62	>	.53
Q35	.47	<	,49	.46	=	.46
Q36	.57	>	.52	.76	>	.66

AQ37	.34	>	.29	.26	>	.22
Q39	.89	>	.79	.89	>	.79
Q40A	.80	>	.69	.82	>	.79
Q40B	.83	>	.69	.82	>	.80
Q40C	.58	<	.64	.66	>	.61
Q40D	.74	>	.64	.71	>	.62
Q41A	1.68	>	1.61	1.50	<	1.61
Q41B	.92	<	1.45	1.25	<	1.56
Q41C	.72	>	.59	.84	>	.66
Q42ABD	3.57	<	4.20	2.95	<	3.67
Q42CE	4.22	>	3.89	5.64	>	5.23
Q43A	5.40	<	9.45	25.89	>	6.74
Q43B	19.42	<	24.27	41.71	>	19.35
Q43C	26.70	>	15.81	75.89	>	15.56
Q51	1.09	<	1.11	1.51	>	1.12
Q54	.46	>	.41	.41	>	.36
Q55	.49	>	.47	.44	<	.46
Q56	.38	>	.36	.38	<	.40
Q57	.48	>	.42	.48	>	.46
NAMEID_1	not available for *i* generation			1.70	<	1.71
CATNUM_1				1.22	>	1.21
LESSTHAN_1				2.83	>	2.14
ABSTRACT_1				3.24	>	2.89
NETABSTRACT_1				3.16	>	2.89
MATURITY_1				2.93	>	2.72
NACH				1.04	>	.84
NAFFORIG				.71	>	.70
NAFFREV				.87	>	.78

	Out of total of 57 comparisons:	Out of total of 66 comparisons:
SDs	40 peertels > parwrits (70.2%)	49 peertels > parwrits (74.2%)
	16 peertels < parwrits (28.1%)	14 peertels < parwrits (21.2%)
	1 peertel = parwrit (1.8%)	3 peertels = parwrits (4.5%)

Table 4 - 49

Comparison of means: 2 generations, 3 nationalities

	i generation	*i* + 1 *generation*		
	(76% American)	Switzerland	Germany	USA
	(*N* = 132)	*n* = 138	*n*= 524	*n* = 348
Total paternal presence	4.5	4.8	4.5	3.9
Q38ab (fairy tales told by parents)	30.2	55.8	54.6	42.1
Q38ef (films on fairy tales seen)	14.3	9.5	14.4	27.0
Q44 (Sleepovers)	11.1	11.7	12.8	21.4
Q45A (watching TV)	.32	.31	.39	.51
Q2 ("... the wise person lives for today")	2.7	3.0	3.2	4.2
Q6 ("... why doesn't [a laborer] do better")	3.3	2.4	3.5	4.7
Q24 ("when born ... already in the cards")	1.5	2.0	1.7	2.6
Q39 (formality on telephone w. strangers)	3.1	3.1	2.9	2.1
Q41A (prefers individual or 1-on-1 activ's)	2.2	2.2	2.1	1.1
Q41B (prefers to partic. in group activities)	1.0	1.5	1.4	2.0
Q42ABD (formal [vs. familiar] self identific.)	8.3	7.1	8.4	5.3
Q42CE (addressing drs./ clericals formally)	10.2	3.7	4.4	5.4
B-items (resignation, "c'est la vie")	7.8	8.6	8.8	11.8

The *i* generation sample must be recognized as being essentially an American sample. The 28 Germans among the Non-Americans [the few remaining ones were mostly foreigners in Germany] simply constituted too small a group to use in comparisons.

Table 4-50

Partial correlation coefficients (by SPSS-10)

Controlling for "country of birth," "rural versus urban," and "gender."

(Coefficient/(D.F.)/2-tailed significance, $\alpha = .05$ adjusted by modified sequential Bonferroni test)

Parent at age	PC	Rod-frame	Porteus	NAME ID	Net Abstra.	Maturit.	N-Ach	N-AFFOR	41-A	43-A
FA01	NS	-.16/ (1103)/ .000	NS	.17/ (1151)/ .000	NS	.11/ (1151)/ .000	.13/ (786)/ .000	NS	NS	-.12/ (1152)/ ..000
FA02	[.09/ (1103)/ .004]	-.13/ (1103)/ .000	NS	.18/ (1151) .000	NS	.12/ (1151)/ .000	.17/ (786)/ .000	NS	.10/ (1151)/ .001	-.11/ (1152)/ .000
FA05	.12/ (1103)/ .000	-.10/ (1103)/ .001	NS	.20/ (1151)/ .000	NS	.13/ (1151)/ .000	.19/ (786)/ .000	NS	.13/ (1151) .000	-.13/ (1152)/ .000
FA10	NS	NS	NS	.18/ (1151)/ .000	NS	.12/ (1151)/ .000	.19/ (786)/ .000	NS	.13/ (1151)/ .000	-.12/ (1152)/ .000
FA15	NS	NS	NS	.17/ (1151)/ .000	NS	.09/ (1151)/ .001	.16/ (786)/ .000	NS	.10/ (1151)/ .000	-.10/ (1151)/ .000
MO01	NS	NS	NS	[.08/ (1151)/ .005]	NS	NS	NS	[.09/ (786)/ .005]	NS	NS
MO02	NS	NS	NS	.10/ (1151)/ .000	NS	NS	NS	NS	NS	NS
MO05	NS	NS	NS	.13/ (1151)/ .000	NS	NS	NS	NS	NS	NS
MO10	NS	NS	NS	.14/ (1151)/ .000	NS	NS	.12/ (786)/ .001	NS	NS	NS
MO15	NS	NS	NS	.11/ (1151)/ .000	NS	NS	[.10/ (786)/ .004]	NS	NS	NS

Table 4-51

"Childhood' Variables with "Childhood" Variables.

Generation $i + 1$. Partial correlations between variables. Pearson $r > .20$. Controlling for "country" and "gender."

In this and the following tables maximum D.F. = 1154, minimum D.F. = 347; $p = .000$, 2-tailed significance.

	Kindval	Total	High	Totpar	Totsib	Totan	38cd	44	45a	45d	45e	45f	45g
Kindval	1.00	.67	.26	.26	-.30	ns	ns	ns	-.27	ns	-.28	ns	ns
Total	.67	1.00	.25	ns	-.23	ns	ns	ns	-.24	ns	-.23	ns	.21
High	.26	.25	1.00	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Totpar	.26	ns	ns	1.00	ns	.22	ns	ns	ns	ns	-.21	ns	ns
Totsib	-.30	-.23	ns	ns	1.00	.61	ns	ns	ns	ns	ns	ns	ns
Totan	ns	ns	ns	.22	.61	1.00	ns	ns	ns	ns	ns	ns	ns
38cd	ns	ns	ns	ns	ns	ns	1.00	ns	ns	ns	ns	ns	.27
44	ns	ns	ns	ns	ns	ns	ns	1.00	ns	-.22	.23	.20	ns
45a	-.27	-.24	ns	ns	ns	ns	ns	ns	1.00	ns	.20	ns	ns
45d	ns	ns	ns	ns	ns	ns	ns	-.22	ns	1.00	ns	-.28	ns
45e	-.28	-.23	ns	-.21	ns	ns	ns	.23	.20	ns	1.00	ns	ns
45f	ns	ns	ns	ns	ns	ns	ns	.20	ns	-.28	ns	1.00	ns
45g	ns	.21	ns	ns	ns	ns	.27	ns	ns	ns	ns	ns	1.00

Note: 38cd also correlates (.43) with 38ab. This is not shown here, because 38ab does not significantly correlate with anything else

LEGEND

Kindval= Rated calibre or evaluation of school
High = Parental SES (higher of both parents)
Totsib = Total aggregate no. of sibs throughout childhood
38ab = Total annual no. of fairy tales heard from parents
44 = Total average no. of sleepovers p/a
45d = Typical amount of time spent daily at home d. ch.
45f = Typical amount of time spent daily with friends d. ch.
Total = Total number of languages learned by subject (in school, home, etc.)
Totpar = Total aggregate parental presence in home throughout childhood
Totan = Total aggregate "any sib" at all five ages levels
38cd = Total annual no. of fairy tales read by oneself
45a = Typical amount of time spent daily at TV during childhood
45e = Typical amount of time spent daily on telephone during childhood
45g = Typical amount of time spent daily reading during childhood

Table 4-52-A

Partial Correlations: Generation $i + 1$ "Adulthood" Variables with "Adulthood" Variables (Controlling for "Country" and "Gender")

D.F. for most = 1154, for some = 347. Only shown are correlations with $p = .000$, 2-tailed significance *and* Pearson $r > .20$

	Q2	Q5	Q6	Q7	Q8	Q10	Q14	Q16	Q17	Q19	Q24	Q25	Q31	Q32
Q2	1.00			.32						.22				
Q5		1.00				.23		.20						
Q6			1.00		.23		.24	.21	.22					
Q7	.32			1.00							.21			
Q8			.23		1.00	-.25	.31	.25	.24			.37	.24	
Q10		.23			-.25	1.00		-.28				-.21		
Q14			.24		.31		1.00		.21			.21		
Q16		.20	.21		.25	-.28		1.00				.24	.21	
Q17			.22		.24		.21		1.00	.23	.22	.23		.33
Q19	.22								.23	1.00				
Q24				.21					.22		1.00			
Q25					.37	-.21	.21	.24	.23			1.00	.21	
Q31					.24			.21				.21	1.00	
Q32									.33					1.00
Q46						.20								
Q41A														
Q41C														
42ABD														
Q43A														
Q43B														
Q43C														
											-.22			
NAMEI														
LESST														
ABSTR														
NETA														
MATU					-.22				-.26			-.21		
NACH														

Note: Only variables which correlate at the indicated significance and r levels with at least two other variables are included in this table

Table 4-52-B

Partial Correlations: Generation *i* + 1 "Adulthood" Variables with "Adulthood" Variables (Controlling for "Country" and "Gender")

D.F. for most = 1154, for some = 347. Only shown are correlations with $p = .000$, 2-tailed significance, *and* Pearson $r > .20$

	Q46	Q41A	Q41C	42ABD	Q43A	Q43B	Q43C	NAMEI	LESST	ABSTR	NETA	MATU	NACH
Q2													
Q5													
Q6													
Q7													
Q8												-.22	
Q10	.20												
Q14													
Q16													
Q17												-.26	
Q19													
Q24								-.22					
Q25												-.21	
Q31													
Q32													
Q46	1.00							.22					
Q41A		1.00	.21					.28				.23	
Q41C		.21	1.00					.29					
42ABD				1.00				.21					
Q43A					1.00	.29	.20						
Q43B					.29	1.00	.88	-.20					
Q43C					.20	.88	1.00						
NAMEI	.22	.28	.29	.21		-.20		1.00	.34	.30		.30	.27
LESST								.34	1.00	.49	-.21	.28	
ABSTR								.30	.49	1.00	.75		
NETA									-.21	.75	1.00		
MATU		.23						.30	.28			1.00	
NACH								.27					1.00

Note: Only variables which correlate at the indicated significance and *r* levels with at least two other variables are included in this table

Table 4-53

Partial Correlations: Generation *i* + 1 "Childhood" Variables with "Adulthood" Variables (Controlling for "Country" and "Gender")

D.F. for most = 1154, for some = 347. Only shown are correlations with $p = .000$, 2-tailed significance *and* Pearson $r > .20$

	Kindval	Total	High	Totpar	Totsib	Totan	38cd	44	45a	45d	45e	45f	45g
Q2	-.25	-.23											
Q6	-.25	-.24											
Q9	-.29	-.21											
Q10	.23												
Q15	-.21	-.16											
Q17	-.20				.20								
Q19	-.24	-.21											
Q21	.22												
Q24	-.24	-.21											
Q25	-.23												
Q32					.23								
Q37	.22												
Q39	.29	.21											
Q41A	.31	.32	.22										.22
Q41C	.29	.27											
42ABD	.22	.21											
Q43B	-.23												
Q46	.40	.35											
Q56	.21	.25											
NAME	.47	.44	.20	.23							-.25		.23
LESST					-.22								
MATU	.33	.31	.21						-.22				.23
NACH	.35	.29		.22									

Note: Only variables which correlate at the indicated significance and *r* levels with at least two other variables are included in this table

NB: for the LEGEND of variables on the "childhood" side, see bottom of table 4-51, above; for the LEGEND of variables on the "adulthood" side, see the the following page, below.

LEGEND of ABBREVIATIONS

For full wording of questionnaire items, see Appendix II, below

VARIABLES CONCERNED WITH CHILDHOOD ACTIVITIES & CHARACTERISTICS

HIG = parental SES (highest)
KIN = calibre of school (kindval)
TOT = total number of languages
38A = no. of fairy t's heard (38AB)
38C = no. of fairy t's read on own (38CD)
38E = no. of fairy t's seen (films, video) (38EF)
PC = Picture completion subtest of WAIS-R
Rod = Rod & Frame field dependence/indep. test
TOTSIB01, etc. = Number of sibs at age 1, etc.
Eldon = Eldest or only child
45A = Amount of time watching TV/videos
45C = Amount of time w.homework/studying
45D = Amount of time at home
45E = Amount of time on telephone
45F = Amount of time with friends
45G= Amount of time reading
44 = Number of sleepovers annually
TOTPARE = aggregate parental presence

VARIABLES CONCERNED WITH ADULTHOOD PERSONALITY

Q1 = wrong to hurt a friend's feelings
Q2 = with world as it is, live for today
Q4 = "I set difficult goals for myself ..."
Q5 = husbands/wives should have same chores
Q6 = why don't some "try to do better in life?"
Q7 = "...plans hardly ever work out anyway"
Q8 = many foreign immigrants are uncivilized
Q9 = no such thing as permanent friendship
Q10= "Homosexuals have equal rights ..."
Q13= I work until satisfied with results
Q14= "Taxes" rise because of freeloaders
Q16= Restrict public contacts of those HIV+
Q17= "...love, gratitude & repect for parent"
Q19 = Some people take things too seriously
Q24= (Don't fight it, it) is already in the cards
Q25= "criminals ... sh'be hung from lampposts"
Q31= better to be rich than educated
Q32= Respect elders "no matter what"
Q33= use simple language even if not precise
Q39= familiar vs. formal address of strangers
Q41A/B= pref. for indiv./1-on-1 over group activ's
Q41C= a lot of "amorphous" activities
Q42ABD = level of formality in self-presentation
Q42CE level of formality in addressing drs., clergy
Q43A= a lot of writing to friends/relatives
Q43B= a lot of telephoning friends/relatives
Q43C= a lot of being telehoned by friends/relatives
Q46= always explain to a child reasons for requests
NAM= erudition, knowledgeabity
LEST= an index of abstract categorizat. competence
ABSTR= an overall index of abstraction competence
NETABST= competence to categorize & label
MAT= an index of maturity in assoc. with others
N-Afforig = original measure of affiliation motivat.
N-Affrev = revised measure of affiliatin motivation
N-Ach = achievement motivation (from TAT's)

CHAPTER 5

DISCUSSION

A - The Phenogenotypic or Cross-Generational Comparisons: A Secular Shift?

Hypothesis 1 (p 61, above) makes a series of predictions as to a "secular shift."[34] Let us examine this, first comparing the childhood data, and then the adulthood data elicited from the two generations.

For the childhood data, the simplest case is in the correlations between PC 31 (*i* generation, see pp. 100-101, above, for the detailed component matrix) and PC 33 (*i*+1 generation, see p. 104, above, for the detailed component matrix). In the tables representing the principal component loading matrices which resulted from the PC analyses, to permit a focus upon the more salient findings, the following loadings were highlighted (bold print): (a) all childhood demographic variable loadings over .500 and (b) all other childhood and all adulthood loadings over .250.

The sample pool is here restricted to $n = 132$ on both sides. That is, the subjects where we have the base questionnaire data on *both* generations.

For the adulthood data, the comparable comparison is that between PC 36 (*i* generation, see pp. 113-15, above, for the detailed component matrix) and PC 38 (*i* + 1 generation, see pp. 119-20, above, for the detailed component matrix). The sample pool is here similarly restricted to $n = 132$ on each side.

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[34] Hypothesis 1 stated:
A clear secular shift will be found, in comparing the responses of the two generations (i and i+1), from a greater prevalance of vertical to a greater prevalence of horizontal cultural transmission. This will be exhibited in such as a general decrease in "family-centeredness," as well as a specific (a) decrease in preference for individual and one-on-one activities, (b) increase in preference for group activities, (c) increase in interest in televideo (telephone, TV, etc.), (d) increase in "sleepovers," (e) decrease in interest in reading and writing, (f) a quite general increase in egalitarianism, (g) decreasing belief in lifelong friendship, and (h) decrease in respect/differentiation with a concurrent (i) increase in familiarity/undifferentiation in linguistic behavior.

The pattern for the correlations between the two childhood matrices is in full detail given in Table 4-33 (p. 143, above) and for the two adulthood matrices in Table 4-35 (p. 145, above). To interpret the meaning of these results, we restrict our focus to the components between which significant correlations obtain, and then elucidate by listing the most salient component loadings in each case. This renders the following for the cross-generational comparison of childhood data:

Figure 5-1

PC 31 (*i generation)*		PC 33 (*i + 1 generation*)
1_31	$\Leftarrow$ $r = .414$ $\Rightarrow$	1_33
hi grandparental presence [10 loadings above .84] hi presence of older sibs [.54 to .68] lo parental SES [-.32]		hi grandparental presence [10 loadings above .92] hi rural/lo urban background [.32]
3_31	$\Leftarrow$ $r = .447$ $\Rightarrow$	2_33
lo presence of other sibs [loadings of -.56 to -.82] hi urban/lo rural background [-.40]		lo presence of other sibs [loadings of -.60 to -.82] hi maternal presence [.57 to .70] high parental SES [.29] hi total # languages spoken [.27]

Similarly, for the cross-generational comparison of the corresponding sets of adulthood components, we obtain

Figure 5-2

PC 36 (*i generation)*		PC 38 (*i + 1 generation*)
1_36	$\Leftarrow$ $r = .406$ $\Rightarrow$	1_38
B-items (resignation, "c'est la vie") [loading of .76] C-items (traditional idealism) [.74] Q7 (no sense making plans) [.65] Q15 (the great are allowed to do anything) [.62] A-items (conscious striving) [.54] Q17 (respect for parents) [.53] Q14 (dislike of the 'freeloaders') [.52] Q9 (there's no lifelong friendship) [.51] Q3 (don't ask favors of people) [.49] Q32 (respect for elders) [.49] Q26 (friendly to some/distant to most) [.47]		B-items (resignation, "c'est la vie") [.80] Q9 (there's no lifelong friendship) [.58] Q15 (the great are allowed to do anything) [.54] Q24 (success is preordained) [.54] C-items (traditional idealism) [.52] Q8 (dislike of most foreign immigrants) [.50] Q32 (respect for elders) [.48] Q2 (no sense planning/live for today) [.47] Q12 (equality's been stressed too much) [.45] Q31 (being rich more imp. than educated) [.44]
2_36	$\Leftarrow$ $r = .313$ $\Rightarrow$	4_38
Q46 (respect for children's rights) [.64] Q35 (don't get upset over lateness) [.53] Q5 (equal chores for hubands & wives) [.53] Q10 (homosexuals have equal rights) [.53]		Q43B (lo telephone calls made) [-.59] Q43C (lo telephone calls received) [.-.59] Q46 (respect for children's rights) [.51] Q55 (feels self closer to peers than parents) [.42]

Q56 (parents sh'be children's buddies) [.50]
A-items (conscious striving) [.48]

$r = .336 \Rightarrow$ 5_38
A-items (conscious striving) [.63]
Q13 (I work very hard to get there ...) [.56]
Q46 (respect for children's rights) [.48]
Q4 (I set difficult goals for myself ...) [.41]

There is not much of a shift to be seen here, especially on the childhood side. One notes that in the first (strongest) component there continues a pronounced grandparental presence from generation to generation (indicative of the tilt toward the rural of this particular subsample of n = 132). The presence of other sibs seems to have decreased somewhat, and parental SES to have increased slightly. Other than that, one notes that patterns of parental childhood demographics are largely repeated in the offspring generation.

On the adulthood side, there is again a lot of similarity between the generations. However, we note that indices of resignation and cynicism (B-items) have increased in strength, whereas those of traditional idealism (C-items) have cross-generationally suffered a diminution.

Tables 4-43, 4-44, and 4-46 (pp. 151-153) on the mean differences between the generations on some of the key individual variables are more revealing. One notes here on the childhood side a marked decrease in the size of families, a marked increase in fairy tales one was told or has seen as films (but not in those read!), in sleepovers, and in watching of TV, with a concomitant decrease in amount of reading, and in paternal presence. On the adulthood side, one notes a clear increase in items of resignation and cynicism and in a preference for group activities, as well as in simplification of language at the expense of accuracy, with a concomitant decrease in formality, decrease in differential forms of respect and address, and a marked lowering of interest in individual and one-on-one activities. On the whole, for most items, the pattern is quite in accord with the general prediction of hypothesis 1, as to the nature of an intergenerational shift. Two caveats are, however, in order here. First, the subsamples used in this comparison are rather small, and many of the findings are, therefore, not very robust.

Secondly, the "young adults" of the $i + 1$ generation (ca. 18 years in age) cannot be expected to resemble entirely a parental group (i generation) of adults some 20 to 50 years older than they! There are age-, rather than cohort-related differences which also play a role here. Finally, there are national (country and/or continental) interaction effects: With a few exceptions this overall intergenerational shift is stronger in the U.S. than in Europe (see Table 4-49, p. 159). One of the salient exceptions to this is in certain aspects of an increasing embrace of egalitarianism, where the shift is markedly stronger in Europe than in the U.S.. For instance, a general disappearance of respectful forms of address for professionals ("Dr.," "Reverend," etc.) is noted in many Americans (of the $i + 1$ generation) --- but was found to be much more prevalent and pronounced in most Europeans interviewed.

Finally, on most indices examined, there seems to be a slightly larger percentage of peertels and a somewhat smaller percentage of parwrits in the $i + 1$ generation than in the i generation (tables 4-43 and 4-44, pp. 151-52). Even in the index of uprootedness, or deviation from all norms (Table 4-48, p. 157-58, above), this shift (though here failing to reach statistical significance) is apparent.

B – Is There a Clear Conflict Apparent between the Vertical and the Horizontal?

According to hypothesis 2, a clear conflict would be found "upon examining the various correlations between the 'vertically-connected' and the 'horizontally connected'."[35] Although this pattern is indeed found in almost all component matrices, it is most pronounced and evident in the most robust analyses, those involving the entire pupil subject group of $N = 1158$. For example, in PC 34 (pp. 105-106, above) high parental (especially paternal) presence (Component

[35] Hypothesis 2 stated:
A clear conflict (expressed in significantly negative correlations) will be found, upon examining the various correlations between the "vertically-connected" (i.e., parental presence, fairy tales, writing, etc.) and the "horizontally-connected" (i.e., sleepovers, peers, "tele-activities," etc.) indices (and extracted components loading high/low on such variables) for the two generations (i and $i+1$).

1_34) is negatively correlated with time spent on TV and telephone. The contrasts are even more apparent in component 5_34. In most (but not all) cases positive loadings of parwrit indices go with negative loadings on peertel indices, and vice versa. In PC 35 the three cognitive measures and an index on the academic quality or calibre of the school (especially in 1_35, 4_35, and 5_35) are seen to be associated with most of those parwrit and peertel indices which hypothesis 2 predicted (where it must be remembered that a *low* score on rodframe is "best," that is, goes with high scores on other intellective measures – zero being the perfect score on rodframe).

We may derive a picture consistent with this, from the network of correlations of specific variables depicted in Tables 4-51, 4-52A, 4-52B, and 4-53 (pp. 161, ff., above). The pattern is virtually uniform here: Indices defined hereinabove as "parwrit" indices are virtually everywhere correlated positively with other parwrit indices, and negatively with "peertel" indices.

C – Is there Evidence that High Vertical Transmission Correlates with Maturity of the Offspring?

According to hypothesis 3^2 [36]a demonstrable correlation should be manifest between the amount of vertical (parental) enculturation and the "maturity and competence" of their offspring. This leads us to intragenerational *developmental* comparisons: *i* generation childhood data with

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[36] Hypothesis 3 stated:
Vertical cultural transmission from parents to children.
There will be a demonstrable significant positive correlation between the maturity and competence of the young adults and the total vertical cultural transmission (C^V) they had received some years earlier as children, from (or under the guidance of) their parents. C^V entails (a) sheer parental presence and (b) vertical/authoritative transmission (i.e., "fairy tales" plus "hierarchical/didactic stance") from such parents to the child.
3.1--As a corollary, it is more specifically hypothesized that parents who have abdicated the traditional parental role, and have assumed a "buddy," nondidactic, peerlike, or horizontal role ("*permissives*") are by definition no longer acting in the cultural transmission chain, and are thus equal to "null" or absent parents.
3.2--As a second corollary, in the absence or attrition of such vertical transmission *in childhood*, one should find immaturity, developmental arrest, and an impairment of behavioral differentiation and categorization *in the (young) adult some years later.*
3.3--As a further corollary, such (young) adults will vary accordingly in their degree of commitment to traditional institutions.

i generation adulthood data, and *i* + 1 generation childhood data with *i* + 1 generation adulthood data. The first of these comparisons (*i* generation) should not be expected to render very robust findings, as we are limited to a small subject pool of $n = 132$, on every side. We proceed as with hypothesis 1, above, focusing only on the principal components between which significant correlations appear, and then elucidating by listing the strongest component loadings for each case. The only possible developmental comparison on the *i* generation follows (from table 4-29, p. 139, above). There are only two (positive) correlations which emerge:

Figure 5-3

PC 31 (*i generation childhood*)		PC 36 (*i generation adulthood*)
3_31	⇐ $r = .277$ ⇒	5_36
lo presence of other sibs [loadings of -.56 to -.82] hi urban/lo rural background [-.40]		Q30 just money w/o upbringing is not enough [.51] Q9 there *is* such a thing as lifelong friendship [-.50] Q51 friends from years ago are still friends [.45]
4_31	⇐ $r = .353$ ⇒	2_36
paternal absence (in teens/not in early yrs) [-.64 at age of 15, -.49 at 10, -.33 at 5, +.22 at 1] Q45G lot of reading [.54] hi number of foreign languages [.53] significant geog. relocation since birth [.44] hi SES [.40] hi amount of fairy tales read on own [.36]		Q46 Explain every request to a child [.64] Q5 Equal chores for husbands and wives [.53] Q10 Homosexuals have equal rights [.53] Q35 Don't insist on punctuality [.53] Q37 Avoids infantilistic speech [.40]

We proceed similarly to the developmental analysis of the *i* + 1 generation, examining first the case of the maximum number of subjects (which, however, excludes a number of variables) (Table 4-32, p. 142, above) Seventeen significant correlations emerge in this most robust analysis of the study:

Figure 5-4 A

PC 35 (*i + 1 generation childhood*)		PC 41 (*i + 1 generation adulthood*)
1_35	⇐ $r = -.246$ ⇒	1_41
hi parental presence, espec. paternal [.71 to .60] hi number of sibs [.60 to .51] not "eldon" [-.52] hi calibre school [.29]		hi B-items (resignation, "c'est la vie") [.68] hi C-items (traditional idealism) [.61] Q17 hi respect for parents [.56] Q25 some criminals sh'be hung from lampposts [.49]

hi parental SES [.27]

MATUR lo maturity [-.48]
Q24 no sense fighting fate ("in the cards") [.48]
Q8 many foreign immigrants are uncivilized [.47]
Q15 famous people are allowed to do anything [.45]
NAMEID lo erudition [-.44]

2_35 ⇐ ***r* = .200**

hi grandparental presence [.73 to .66]
hi number of sibs [.53 to .46]
not "eldon" [-.52]
lo calibre school [-.27]

4_35 ⇐ ***r* = .288**

hi maternal presence [.51 to .38]
lo calibre of school [-.42]
lo number of languages [-.41]
Q45E hi on telephone [.36]
Q45A hi TV watching [.36]
Q45G lo amount of reading [-.34]
Q44 hi sleepovers [.31]

5_35 ⇐ ***r* = -.306**

hi number of languages [.50]
hi calibre of school [.45]
Q45G hi amount of reading [.31]
Q45D hi on being at home [.36]

Figure 5-4 B

2_35 ⇐ ***r* = -.159** ⇒ 2_41

FOR DETAILS, SEE ABOVE (THIS PAGE)

hi A-items (conscious striving)[.59]
hi C-items (traditional idealism)[.50]
Q40B hi on sociocentricity [.49]
Q40D hi on idealism [.48]
Q40C lo on materialism [-.47]
Q13 (I work like a slave until I'm satisfied)[.45]
Q40A lo on egocentricity

3_35 ⇐ ***r* = .108**

hi grandparental presence [.52 to .47]
lo other sibs (esp. at early age) [-.44 to -.33]
hi "eldon" [.44]
hi parental (esp. maternal) presence [.36 to .41]

4_35 ⇐ ***r* = -.208**

FOR DETAILS, SEE ABOVE (THIS PAGE)

5_35 ⇐ $r = .238$

FOR DETAILS, SEE ABOVE (PRIOR PAGE)

Figure 5-4 C

2_35 ⇐ $r = -.118$ ⇒ 3_41

FOR DETAILS, SEE ABOVE (PRIOR PAGE)

lo in telephone calls made to friends [-.58]
lo in telephone calls received from friends [-.53]
Q31 (more important to be rich than educated) [.37]
NAMEID hi in erudition [.37]
Q11 (on bad news, hide your feelings) [.36]
Q26 (be friendly with some, distant with most) [.34]

3_35 ⇐ $r = .125$

FOR DETAILS, SEE ABOVE (PRIOR PAGE)

4_35 ⇐ $r = -.243$

FOR DETAILS, SEE ABOVE (PRIOR PAGE)

6_35 ⇐ $r = -.258$

Q38CD hi on fairy tales read by self [.66]
Q38AB hi on fairy tales heard told [.64]
Q44 hi on sleepovers [.41]
Q38EF hi on films on fairy tales [.35]
Q45F hi on being with friends [.34]
Q45D lo on being at home [-.30]
Q45E hi on being on the telephone [.28]

7_35 ⇐ $r = -.103$

Q45C hi on doing homework [.54]
Q45D hi on being at home [.49]
Q45F lo on being with friends [-.49]
Q44 lo on sleepovers [-.36]
Q45G hi in reading [.32]
lo on all three cognitive indices (PC, RODFRAME, PORTEUS)[-.23, .23, -.32]
lo on calibre of school [-.28]

Figure 5-4 D

4_35 ⇐ $r = -.106$ ⇒ 4_41

FOR DETAILS, SEE ABOVE (PRIOR PAGE)

Q40B lo in sociocentricity [-.48]
Q40A hi in egocentricity [.44]
Q40C hi in materialism [.44]

Q40D lo in idealism [-.43]
hi in A-items (conscious striving) [.42]
Q8 does not believe foreigners uncivilized [-.34]
Q2 (with the world as it is, live for today) [.30]
Q16 doesn't think HIV+'s sh'be restricted [-.30]

5_35 ⇐ $r = .112$

FOR DETAILS, SEE ABOVE (PAGE 171)

Figure 5-4 E

7_35 ⇐ $r = .214$ ⇒ 10_41

FOR DETAILS, SEE ABOVE (PRIOR PAGE)

Q41C lo in "amorphous" activities [-.37]
Q51 has not had friends who lasted [-.35]
Q5 (equal chores for husbands and wives) [.32]
CATNUM lo in capacity to categorize [-.34]
LESSTH lo in categorization abstraction [.28]
41B lo in group activities [-.28]

Figure 5-4 F

6_35 ⇐ $r = -.105$ ⇒ 13_41

FOR DETAILS, SEE ABOVE (PRIOR PAGE)

Q40D lo in idealism [-.35]
Q40C hi in materialism [.30]
Q40A lo in egocentricity [-.30]
Q20 hi in wishing watch to be accurate [.29]
Q18 hi in egalitarianism [.25]

We note that at least some aspects of the few *i* generation correlations which do emerge "make sense" in terms of the hypothesis. A small family, with few siblings in one's childhood background and an urban upbringing (PC 3_31) goes with some mature values in adulthood (PC 5_36), such as a belief that there are more important things than money, belief that there is indeed such a thing as a permanent, lifelong friendship, and displaying in one's own life, that the friends of many years ago are still among one's friends of today. On the other hand a component on childhood data marked by paternal absence, a lot of reading and knowledge of languages (PC

4_31) correlates strongly with adult egalitarianism, respecting the rights of others, and an easygoing attitude on lack of punctuality and the breaking of promises (PC 2_36).

Moving to the more robust and multitudinous findings on the $i + 1$ generation, we start by looking at the correlations between the two strongest components (1_35 and 1_41). Here we note that a childhood pattern marked by high parental, and most especially paternal, presence in the childhood home, with a number of siblings, and a fairly high-calibre school as well as parental SES, tends to correlate *negatively* with indices of resignation and cynicism, traditional idealism, respect for parents, intolerance, low maturity, and low erudition. However, high *grandparental* presence in the childhood home together with a high number of siblings, and a low-calibre school background (PC 2_35) tends to correlate *positively* with those same indices of resignation, cynicism, etc.

What is interesting, is to note that high maternal presence is not by itself sufficient to overcome an environment replete with horizontal cultural transmission influences. Thus, one notes (in PC 4_35) that in spite of relatively high maternal presence in the childhood home, the combined effect of a low-calibre school, lack of languages, much time spent on the telephone and watching TV, with a low amount of reading and a high number of "sleepovers," is sufficient to generate a strong *positive* correlation with that same component (PC 1_41) marked by indices of resignation, cynicism, etc. Also of interest is what happens when the mother is "taken out of the equation," but all the other indices are highly "vertical" or "homecentered," as is the case in PC 5_35. Here we note a very strong *negative* correlation with the adulthood component PC 1_41. This pattern is by and large repeated in the other correlations shown on the above pages, although a few (such as PC 6_35 and PC 3_41) represent what one might call "mixed bags," which defy simple interpretation.

In the foregoing analyses, a number of variables had to be sacrificed, in order to analyze data from all subjects. If we now go to the opposite extreme, analyzing all variables used in the

testing battery, but sacrificing subjects in a necessaary tradeoff, this leads us to the pattern of correlations between PC 32 on the $i + 1$ childhood side and PC 45 on the $i + 1$ adulthood side (p. 140, above). Only three significant correlations emerge, and we analyze these as follows:

Figure 5-5

PC 32 (*i + 1 generation childhood)* PC 45 (*i + 1 generation adulthood*)

2_32 ⇐ *r* = -.270 ⇒ 1_45

hi maternal (& paternal) presence [.70 to .51]
lo in number of sibs [-.63 to -.53]
hi parental SES [.30]

hi B-items (resignation, "c'est la vie") [.81]
hi C-items (traditional idealism) [.59]
Q24 (don't fight fate/it's in the cards) [.57]
Q9 (no such thing as a lifelong friendship) [.53]
Q7 (no sense planning ...plans never work out) [.51]
NAMEID lo in erudition [-.50]
A-items (conscious striving) [.48]
Q15 (the famous are allowed to do anything) [.48]
Q32 (respect for elders) [.48]
Q17 (respect for parents) [.47]
Q12 (people are not equal, but different) [.46]
Q33 (speak simply, rather than precisely)[.46]
MATUR lo in maturity [-.41]

4_32 ⇐ *r* = .194

hi maternal presence [.54 to .23]
lo paternal presence [-.45 to -.17]
lo in reading [-.29]

2_32 ⇐ *r* = .213 ⇒ 4_45

FOR DETAILS, SEE ABOVE (THIS PAGE)

Q43B lo in telephoning friends/relat's [-.53]
Q43C lo in receiving teleph. calls [-.46]
Q6 (why don't unskilled laborers do better?) [.37]
Q42ABD highly informal in presenting self [-.35]
Q43A lo in letter writing [-.34]
Q14 (the freeloaders cause taxes, etc., to rise) [.31]

The first of the significant correlations which emerges here is a negative one, between a component (PC 2_32) loading high on parental (both paternal and maternal) presence, low number of siblings, and high parental SES with a component (PC 1_45) which very much resembles the above discussed PC 1_41, also loading high on indices of resignation, cynicism,

traditional idealism, lack of erudition, etc. We note repeatedly (as in PC 4_32, on this page) that *paternal* (rather than parental) absence from the childhood home, seems to go with lack of childhood reading, and seems often to be *positively* correlated with a general childhood pattern of horizontal or peertel influences and with an adulthood pattern of resignation, cynicism, intolerance, etc. This may, however, reflect an artifact. While there are single-parent families headed by a father, it is much more often the case that the mother stays in the home. Thus a child deprived to having had only one parent (usually the mother) may have a prediliction to a partially "arrested psychological development." However, it may not be the paternal absence, but the absence of *a* parent which may be critical here.

The results shown in the correlation tables on specific variables shed further light on this. Thus Table 4-53 (p. 164, above) shows that the "maturity" (MATUR), "erudition" (NAMEID), "abstraction competence" (LESST), and "achievement motivation" (n-Ach) of the young adults (of generation $i + 1$) correlate positively with school calibre (KINDVAL), number of languages learned (TOTAL), and, in part also, with parental SES (HIGH), overall parental presence in the home (TOTPAR) , and childhood reading (Q45G), and in part *negatively* with childhood time on the telephone (Q45E), childhood time with TV (Q45A), and total number of siblings (TOTSIB).

Whereas on an overall basis, the evidence bolsters hypothesis 3, it is clear that a number of aspects of the predictions of corollaries 3.1 and 3.3 have not been confirmed. In part (especially as to corollary 3.1), because there were no germane data.

D – Greater versus Lesser Resemblance between Parents, Offspring, Peers?

Hypothesis 4 (pp. 62-63, above) predicted that in general "vertically-minded" parents will have "vertical" (parwrit) offspring, and horizontally-minded parents "horizontal" (peertel)

children.[37] A corollary predicted a greater resemblance between parents and children for those (now young adults) who had had a childhood marked by vertical transmission (parental presence, fairy tales, etc.), and lesser resemblance in the case of those who had a largely "horizontal" upbringing. A second corollary predicted a greater deviation from all norms (including those of their own peertel group) of peertel offspring. A final corollary stated that most of this should be found to apply equally to the counterpart groups of the *i* generation.

On one overall measure on similarities, that of the cross-generational comparisons of principal components (Figures 5-1 and 5-2, at the beginning of this chapter, above), one notes that all correlations are positive and of very similar loading patterns for components of both generations, both for childhood and for adulthood data.

Two types of analysis were run to help determine whether one can predict from certain leading (childhood) indices whether some children will tend to resemble their parents more, and some less. More specifically the prediction of corollary 4.1 is that those youths who had a more "traditional" upbringing ("parwrits"), as indicated by (a) high presence throughout childhood of both parents in the home (TOTPAR), (b) high presence "at home" (Q45D), and especially high exposure to/involvement in reading in general during childhood (Q45G), (c) involvement in fairy

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[37] Hypothesis 4 stated:
Greater versus lesser resemblance between parents, offspring, and peers.
Generally, high vertical parents (parwrits) will tend to have high vertical offspring; high horizontal parents will tend to have high horizontals (peertels) as offspring.
4.1 As a corollary, high vertical cultural transmission, from *i* generation parents to *i* + 1 generation children, *as reported by the latter*, in the presence of low horizontal influence, will predict that the subsequent adults of the *i* + 1 generation will resemble their parents relatively more than their peers, as compared to the obverse case.
4.2 As a further corollary, *i* + 1 generation young adults, who *as children* were reared horizontally (as peertels), rather than vertically (as parwrits), will be found more uprooted from all norms -- including even the norms of horizontals of their own generation. Indeed, following the argument of Margaret Mead on this (footnote, p. 21, above), the peertels should even depart (in a random manner) more from the standards (norms) of *their own* "peer group," as in most areas they have come to follow a standard ("of the crowd"), which is "without significance," a standard which is not an *alternative culture or standard*, but an *"anti-culture" or "anti-standard,"* marked by a display of sheer rebellion and disrespect for the traditional and norms.
4.3 As a final corollary, the predictions of the two preceding corollaries as to the *i* +1 generation, will *also and equally apply to the counterpart groups of the i-generation.*

tales, *where parental or grandparental reading of fairy tales* (Q38AB) *was followed by the child's own reading of such* (Q38CD), with concurrent (d) little or no involvment in "sleepovers" (Q44), (e) little or no watching of TV/video (Q45A), and (f) lack of telephoning (Q45E), would tend to resemble their parents more, whereas those who had little or none of such traditional upbringing and displayed more an opposite pattern of conduct ("peertels"), would tend to resemble their parents less.

The following composite measure ("family centeredness") shown in the following paragraph, was applied to the two $n = 132$ $i + 1$ subject data pools (childhood and adulthood). The following were first computed (from the more robust $i + 1$ generation childhood data pool), with each of the six subscores then converted into standard scores:

i) (a) = (total paternal presence + total maternal presence – 5)

ii) (b) = (Q45D + 2[45G])/3

iii) (c) = (Q38AB + 2[Q38CD])/3

iv) (d) = (Q44)

v) (e) = (Q45A)

vi) (f) = (Q45E)

With the above (in standard scores) then placed into a composite score formula, as follows: "family centeredness" = (a + b + c) – (d + e +f)

Each data pool was then split into "thirds, " with an "upper," a "middle," and a "lower third" ranking of each subject on such index of family-centeredness. Paired-sample statistics were then run, separately on each of the three "thirds." The hypothesis here is that those children who are in the top third of their respective group, would resemble their parents more, whereas those in the lowest third would resemble their parents less, that is, would differ more from their parents.

Counting in every case only correlations (as index of similarity) and differences (as index of divergence) of sig. > .001 (approximately equal to an $\alpha = .05$, adjusted by modified, sequential Bonferroni) the pattern shown in Table 4-40 (p. 150), above, was obtained.

The results are clear. In every case the *correlations* are indeed higher for subjects in the "upper third," than those in the "lower third." On the other hand, in each case there were slightly (insignificantly) more *differences* in the "lower third," than between the pairs in the "upper third."

This analysis was then double-checked on the applicability of the implicit model employed in the foregoing cursory analysis, by running a full GLM/MANOVA – but on components, using the *i* childhood PC31 and *i* adulthood PC36 components as "predictors," those of PC33 (*i* + 1 childhood) and PC38 (*i* + 1 adulthood) as "criteria," and "split" as an upper- versus midddle- versus lower-third "factor" index of family centeredness. The data are depicted in Appendix X (pp. 246 ff, below). The analysis clearly supports the hypothesis in the case of the childhood data, but only marginally for adulthood data and not significantly.

The question was then asked, whether one would obtain similar or contrary findings on cross-generational similarities, if one were to base such analysis on the relatively greater or lesser parwrit versus peertel childhood upbringing of the individuals of the *i* (parental) generation (rather than the upbringing of their *i* + 1 children). A similar analysis was thus performed on the *i* childhood data, obtaining composite family-centeredness$_i$ scores, also divided into upper, middle, and lowest third. The results of this are shown in Table 4-41 (bottom of p. 150, above). The pattern of correlations, especially of adulthood indices, very much resembles that previously obtained from scores derived from *i* + 1 childhood data (depicted in Table 4-40), except that "childhood differences" here went (insignificantly) against the pediction. Here also, as a further check, a full GLM/MANOVA analysis was undertaken (for the details of which see the final part of Appendix XI, below). (Note the "eta-squared" values as index of effect size, when $p = .000$.)

Finally, on corollary 4.2 on predicted greater "uprootedness" and deviation from norms of peertels as opposed to parwrits, a clear difference was predicted. Indeed, peertels were

predicted to show random deviations even from their own (peertel group) norms. The assumption here is, that sheer size differences in standard deviations from the respective mean values of the two subpopulations do indeed represent an index of greater versus lesser deviations (perhaps akin to drift). Table 4-48 (pp. 157-58) displays the detailed findings (based on a division of the two subject pools at the median, each into two halves, into "parwrits" versus "peertels"). A summary follows:

Standard deviations from respective means.

i generation	*i* + 1 generation
Out of a total of 57 comparison:	Out of a total of 66 comparisons:
40 peertels > parwrits (70.2%)	49 peertels > parwrits (74.2%)
16 peertels < parwrits (28.1%)	14 peertels < parwrits (21.2%)
1 peertel = parwrit (1.8%)	3 peertels = parwrits (4.5%)

In other words, those below the median on a composite measure of family-centered or vertical transmission (parwrit), which is to say, above the median on horizontal or peertel transmission, show decisively greater deviations from their own groups' norms.

The summary also shows that the same patterns obtain for the *i* generation, in line with corollary 4.3

E – Are Natural Parents Uniquely Irreplaceable?

Hypothesis 5 predicted that natural parents provide a unique bonding/rearing environment, and can in most cases not be replaced by "parent surrogate" or "oblique" figures.[38] In addition to the several *developmental* principal component analyses which seem to indicate

[38] Hypothesis 5 stated:
Uniqueness of parental roles. It is further more specifically hypothesized that there is a uniqueness to (natural/biological) parental presence. Oblique figures (adults of the *i* generation other than the natural parents) who fail to approximate by lifelong presence and dedication the traditional role of biological parents are, to the extent to which they so fail, unable to act as effective transmitters of cultural heritage.

this (note especially the more robust findings of the various parts of Figure 5-4 on the $i + 1$ generation, pp. 171-74, above), the importance of overall parental presence in the childhood home is shown by the correlations of key specific indices in Table 4-47 (p. 156, above).

There is, however, a weakness in our available data. There were simply not enough adopting, step, or foster parents in the sample to permit separate analyses involving "substitute" parents. In the overwhelming majority (of that growing minority) of families where one or both of the parents were absent during all or much of the subject's childhood, there was *no permanent* defined substitute. The data were particularly compelling in the two small subsamples of Native Americans (at two schools in the Leech Lake Ojibwe Indian Reservation) tested. The overwhelming majority of these youths grew up without an intact family, and several had never in their lives come to know their father, mother or a grandparent.

As to the opinion ventured to me as to this study by Professor L. L. Cavalli-Sforza (personal communication), that I might find oblique figures to have largely successfully replaced the increasingly absent parents, the findings seem to indicate the contrary, when one restricts the focus to the home-life of the subject.

However, it could be argued that the "school" of today has largely taken over the educational functions which the parents (grandparents, elder siblings, other family members, the village or tribal elders, and for a select few, the tutors) exercised until about five to six generations (or one and one-half centuries) ago. This argument might be stretched to the point of declaring the school to act nowadays not only *in locus parenti* legally, but more generally, that is, to have assumed from the parents, the role of principal educating agent of children. In general the school appears as an "*oblique*" entitity (characterized by a lot of "one-to-many" transmission). On the other hand, occasionally, the "school" surely includes dedicated teachers, who can establish special one-on-one tutorial relationships with individual pupils. Such are instances of teachers becoming parent-surrogates, and exercising *vertical* cultural transmission. Finally, the school

environment is mostly made up of other pupils, usually at least hundreds, occasionally thousands, and in such sense represents a *horizontal* cultural transmission background.

This composite nature of the school, exercising influences which are at the same time often horizontal and oblique, and occasionally vertical, and (in virtually all cases) impacting upon the individual pupil many more hours each week than parents, may be a reason why it has assumed such a powerful influence. We note that "KINDVAL," the rating of school calibre, as well as the (largely associated) index of TOTAL (number of languages learnt), are by far the most important predictors of adult personality, far overshadowing the role of any of the other indices which are a principal concern of this study (parental presence, reading in general, reading of fairy tales, etc.). This was not predicted by (nor the focus of) the theory of the current study. I am, however, obliged to interpret this in terms of the "integrated" or overall model of the study (see below).

F – Dimorphic Gender Differentiation: Are Both Parents Necessary?

Hypothesis 6 specifically predicted that *both* parents would be found necessary for a proper (orthogenetic) development of the child.[39]

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[39] Hypothesis 6 stated:
Dimorphic gender differentiation.
It is further specifically hypothesized that *both* parents must be present in the child's home to permit the subsequent development of traditional dimorphic (gender) differentiation, *as facilitator of orthogenetic psychological development, general maturity, and erudition.* It is also predicted that in some areas the influences of fathers and mothers will be different. Whereas the various specific directions of such differences are not predicted here (as dimorphic differentiation is in itself *not* a focus of this study), from general evolutionary history and from the general thesis hereof, the following is predicted:
Corollary 6.1: Paternal presence should, in general, predict greater individuality (field independence, preference for one-on-one and individual over group activities, achievement motivation).
Corollary 6.2: Maternal presence should predict greater affiliativeness and idealism.

Again, the first support for the argument is found in the developmental analyses, especially that of the $i + 1$ generation, referred to previously (pp. 171-72, above). More specifically to the point, however, are the partial correlation analyses of certain key indices, presented in Table 4-50, p. 160, above. Clearly, the presence of both mothers and fathers during childhood correlates with erudition in the developing youth some years later. However, as predicted by the hypothesis, maturity and achievement motivation as well as a preference for individual and one-on-one activities correlate positively with *paternal* presence. Unpredicted was the interesting finding that paternal presence seems to inhibit (that is, is negatively correlated with) a penchant for writing (letters to friends and relatives) in later life! Again, for at least some of these findings an alternative explanation may be that in lieu of the effects of paternal presence (or absence) we may be seeing the effects of intactness (or lack of intactness) of the nuclear family as a family unit.

G – Is there a Critical Mass Effect Overpowering Most Parental Influence?

Hypothesis 7 predicted that parental influence must be very strong indeed to constitute an effective enough barrier to keep out the power of horizontal influences during the child's critical (formative) years, *once such influences have spread (namely nowadays) to most of society*, with many parents no longer opposing the mainstream current of horizontal influences.[40] The data of this study do not allow a ready and direct test of this hypothesis. However, some indirect support,

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[40] Hypothesis 7 stated: *The critical mass (diffusion/epidemiological) effect.*
There is no intent to deny that many elements of the the environment, that is, both ΣO and ΣH, as well as all other aspects of the developing youth's ecological environment, can act to reinforce or to inhibit parental influence. However, from the net effect of this, only the following is singled out here for attention: If during the *the formative childhood* period (probably above 1 and below 15) there is *little or no* C^V *among most of the impacting surrounding population* (that is, against the influence of which no effective barrier exists), then, *in the absence of overwhelming vertical cultural transmission*, the subsequent adulthood of an individual will be characterized by (a) preference of group over individual or one-on-one activities, (b) lack of differentiation and depth in relationships, language (lack of distinction between formal versus informal and distance versus

especially in data defining the critical or sensitive childhood period, is given by some of the findings (on which see the discussion on hypothesis 9, below). Other indirect support may be seen in the clear shift (hypothesis 1, above), demonstrated across the two generations, of an erosion of vertical transmission and an increase of horizontally transmission.

Even though not directly testable by the battery of this study, the hypothesis is retained herein, as supported by some historical evidence and because it is an integral component of the theory offered. A child two hundred years ago was subject to little in culturally transmitting model figures outside of parents, grandparents, and a few neighbors. Then, with the introduction of public education about our to six generations ago, came the beginning of the removal from parental guidance and home. The four-year school became a six-year school, then came kindergarten, nursery, and prenursery, concurrently with the increasing absence from the home of first the father, and then the mother. In the 21st century radio, TV, the automobile, airtraffic, computers with E-mail and interactive internet, and the proximity of the mall have increased a child's interactive environment more than ten-thousandfold. If one adds to that the finding (discussed in the inroductory chapter, above) that (group) peer influence seems inherently much more powerful than the vying influence of *any* adult, the need for very strong barriers to maintain any vertically transmitted cultural heritage is clear. If this line of reasoning does not appear compelling, then I urge the reader to do a simple "thought experiment." In how many homes today could a typical parent *successfully* enforce an edict prohibiting TV-watching of certain programs or during certain hours, or even "sleepovers"?

H – Effects of being the Eldest or Only Child and Number of Siblings.

Hypothesis 8 offered a "ratio" model, with parental presence as the numerator and the number of peers present as denominator, each additional sibling reducing by a fraction the

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familiarity), and other behavior, (c) preference for tele-instruments over traditional writing, (d) general egalitarianism.

possible parental investment in the child.[41] This was offered as an alternative to the Zajonc and Schacter models.[42]

The question concerns the Schachter "affiliation" theory, the Zajonc "confluence" theory, and the Küsell "maturity" model. The affiliation theory predicts that "eldest or only" children tend to be more affiliative, the Zajonc theory that they tend to be more intelligent. The Zajonc theory also predicts more generally that intelligence tends to be lower in children brought up in families with a large number of children. Applying a composite score of the three cognitive tests employed herein, no significant general difference was encountered for affiliativeness or intelligence, as called for by the Schacter and Zajonc theories, respectively, as a function of number of siblings. The Küsell "maturity" model predicts that a youth or adult's level of maturity and erudition will be relatively high or low as a function of the ratio of vertical (parental model figures) to horizontal figures (peers, including siblings) in that subject's early life environment. The numerator of the 'Küsell ratio," is the *total parental* presence in the home

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[41] Hypothesis 8 stated:
Effects of being the eldest or only child ("eldon") and number of siblings.
In an ancillary manner, the Schachter affiliation and Zajonc confluence (as to I.Q. and cognitive competencies) hypotheses will be examined on eldons and small versus large families. Relatedly, in terms of the overall model or thesis herein proposed, it is suggested that (less because of genetic, and more because of milieu influence – following Gottlieb's argument cited above, and derived from the general thesis of this study) there will tend to be a higher psychological *differentiation* and *maturity* exhibited in the conduct of a person, rather than intelligence per se (the latter being more genetically and uniquely *organically* developmental), in cases in which there is more parental model figure presence and investment focused upon the individual child. As to some extent there will tend to be a *diminution* of such parental presence and investment *per child,* in cases where there are *many older (or equal age) siblings*, lesser psychological differentiation and maturity are then predicted to result. In other words, what is proposed – directly derived from the general thesis hereof – is that parental presence (as an admittedly only partial index of parental influence) constitutes the *numerator*, whereas sibling presence (and peer presence in general), constitutes the *denominator*, of a fraction determinative of vertical versus horizontal cultural transmission. This differs from the foci of Schachter and Zajonc (upon affiliation and intelligence, respectively), which are only upon the denominator.

[42] Clearly the precise age differences also matter. Thus having a sibling who is 15 months younger (or older) probably has in many ways a quite different effect than having one who is 15 years younger (older). However, as the questionnaires administered did not request information on the ages of siblings, but only whether they were younger or older, full, half, step, foster, their gender, and how many in each case, the issue of age gaps could not be addressed here.

during childhood and is detailed in the final column of Table 4-47 (p. 156, above). This correlates with various specific indices. The five most significant relationships to emerge here are all positive (N.B.: differentiation capacity or field independence is highest, when the "rodframe" index is lowest). A subject's erudition, achievement motivation, maturity, preference to engage in individual and one-on-one as opposed to group activities ("41A"), and capacity to differentiate (field independence) are shown as highest when there was a high level of overall parental presence (all age levels combined). When one examines these findings in juxtaposition to those displayed by the five preceding columns of Table 4-47, one notes the contrary negative correlations of high peer presence during various childhood ages (the "denominator") with such adulthood variables as erudition and maturity. The data clearly seem to support the Küsell ratio hypothesis, and fail to support the Zajonc and Schacter theories focusing solely on number of siblings. (Also see Table 4-50, p. 160, above, for more details on paternal versus maternal presence and at different age levels.)

I – Are there Patterns of Gradients within the Sensitive Period?

Hypothesis 9 states that sloping gradients will be found for a more critical period within a sensitive period for parental childhood entrainment/rearing (rather than a period of uniform influence) and that this critical period will lie above the age of one and below the age of 15.[43]

Such gradients of influence – many showing a most critical period for the effects of influence to lie between the ages of 2 and 10, that means *not yet* at the age of 1, and *no longer* at the age of 15, -- are found through many of the childhood principal component analyses. Many reach an asymptote around the age of 5. This is also demonstrated in Table 4-50 (p. 160, above)

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[43] Hypothesis 9 stated:
Gradients (of increase, or decrease, or a curvilinear increase to an asymptote, followed by a decrease) will be found, indicative of a most *critical* period *within a sensitive period* (probably above the age of 1 and below the age of 15), for the effects of parental and sibling presence in the child's home.

for parental correlation with erudition (NAMEID), maturity, achievement motivation, etc. and in such as the negative correlation of childhood peer presence with adult maturity (Table 4-47, p. 156, above). However, in certain cases the period is most critical at an early age of 1, then gradually declining (as is the case for the negative correlation between peer presence and adult erudition).

In summary, if we may venture the conjecture of a cause-and-effect relationship here: Parental influence appears in most cases at a maximum between the ages of 2 and 10, with much less effect seen before or after that. Peer influence seems to continue longer.

Recapitulating: The Developmental Perspective; Maturity versus Arrest

The case for the importance of sheer parental presence, as a necessary, though admittedly insufficient, condition for parental bonding is straightforward, and has been reiterated many times over the centuries, long before Bowlby (1969) announced such bonding to be essential for the survival of the human species. Highly altricial animals, as *Hominidae*, are perhaps vitally in need of getting a significant amount of memetic transmission from the parental generation, in addition to any genetic transmission. Parents are evolutionarily possibly more hardwired for "parenting" than other possible substitute care-takers, although direct and clear evidence as to this is spotty for *Homo sapiens*. That occasionally grandparents or others do a better job of this than the biologic parents is not disputed. The argument is pursued at greater length in its historical context in the introductory chapter, above, and in connection with the discussion of findings as they relate to hypothesis 5 (on "uniqueness of parental roles," p. 180, above).

The gamut of the early measures on childhood, and the measures as to the subsequent adulthood of the subjects, was intended to predict and then measure the relative emotional and/or intellectual maturity or immaturity ("arrest") of the adult subject. Admittedly "maturity" is far more difficult to define or determine than who lived with the child at a certain age or what the parental SES is. In some of the tests employed there are confounding variables, which, at risk,

are ignored. For instance there is a probable interaction with gender, in responses to the Group Categorization (maturity of social association) Task. Green and Adams-Price (1990) found that age and gender play an important role in determining an adolescent's "secondary attachment" to celebrity figures.

Much work has been done in developmental psychiatry (especially by followers of the late Heinz Kohut) in analyzing developmental arrest and its relation to narcissism and the inability to form meaningful relationships with others (Cohen, 1981). The "metamorphoses" marking psychological development have been related to metaphors connected to early "imprinting" experiences (Klopfer, 1988). It is unfortunate that the battery of tests I am employing in this cannot in some more direct manner get at the experiences connected with traditional "rites of passage," as such have been repeatedly implicated in the development of *maturity* (Boyanowsky, 1977; Delaney, 1995; van Gennep, 1960/1908). Heath (1977), in an important book reviewing the history of work on maturity and competence, asks the question whether to "label behavior as 'healthy' or 'unhealthy,' 'mature' or 'immature" can be much more than "to indulge in personal whim and cultural prejudice?" He concludes that maturity (much more than competence) *can* be defined in terms of objective standards of good psychological functioning (listing such characteristics as honesty - related to an increasing ability to symbolize, as well as compassion, integrity, steadfastness/commitment, courage, each related to an underlying aspect of maturation).

Maturity, of course, is an aspect of the adult's phenotype, and when it extends to a commitment to cultural rites and institutions, it extends to outer layers of what Dawkins has termed the extended phenotype. If these are some of the outermost (or uppermost) reaches of maturity, then certainly it (or its absence, that is, developmental arrest) are to be found up and down the phylogenetic scale. Often, as in neoteny, peramorphic paedomorphosis (Godfey & Sutherland, 1996) or other forms of heterochrony, a term now used both developmentally and evolutionarily (Alberch & Blanco, 1996; Ridley, 1996), the development of some aspects of the

organism has proceeded to normal maturity, while in other respects development has been arrested.

The Cross-Generational Perspective: A Paradigmatic Shift; 1950s, 1990s, and Beyond

Studies conducted in the past decades purport to show a relative developmental arrest in various parts of the Western world, with chronologically young adults increasingly postponing the assumption of adult responsibilities. The paradox was found that the same youth who insist on early freedom, are also the ones who tend to shun and postpone adult responsibilities (as earning one's own livelihood, supporting one's dependents, creating one's own home and raising one's own family, etc.). Watts et al. (1989) discuss a series of findings in Germany over the past decades to this effect. Goleman (1988), as above mentioned, reports the same trend in the U.S.

One important study cited herein, was the cross-cultural study on values and motives of young adults conducted in the 1950s by the McClelland group.[44]

In comparing findings from prior studies to those of this study, one notes that cross-generational differences often stand in interaction with cross-national (or cross-continental) differences. The Americans have changed more and the Europeans less. In fact, as Table 4-49 (p. 164) shows, on almost all indices, the Europeans of the $i + 1$ generation very much resemble the Americans of the i generation! The two notable exceptions are (a) fairy tale telling, where Europeans are today markedly above the U.S. and the earlier generation average, and (b)

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[44] In 1954-55 the group headed by David McClelland (McClelland et al., 1958) conducted a cross-national study of American and German youth. The youths they interviewed and tested would have been in their 50s in the 1990s, and *less than 10 years older* than the average age of the i generation sample in this study. The values and lifestyles of the "McClelland" subjects of the 1950s (American and German about-to-graduate high school students) should therefore resemble the values of the parental (i generation) sample in the present study (except for a difference in class or SES). Table 4-46 (pp. 159-60, above) compares the findings on 22 "McClelland items" in the following studies (a) McClelland et al. 1954-5: Europe (West Germany) vs. U.S. (Northeast), (b) Küsell 1991-3: Europe (three countries) versus the U.S., (c) the i (parental) generation interviewed in 1996-9: Europe (only Berlin) and the U.S., and (d) the $i + 1$ generation interviewed in 1996-9: four countries.

formality, especially in forms of address to those with life-long titles (doctors, clergy), where the Europeans have become markedly *more egalitarian* than the Americans more and more generally eschewing all titles in forms of address (except for a universal *Mr.* or *Herr* for males and *Ms.* or *Frau* for all females).[45]

Comparisons should be made with care, especially when involving the small *i* generation 1996-9 European subsample (only with $n = 32$). It will be noted that the cross-national differences between Americans and Europeans found by the McClelland group in the early 1950s have largely maintained themselves through the 1990s. Four exceptions are (a) the B-items ("c'est la vie," "you can't fight it," resignation, cynicism), where the scores for Americans have markedly shifted to upward over the decades, while the responses of Europeans have stayed more or less the same (in a reversal of the earlier pattern showing themselves at present below those of the Americans), (b) items dealing with respect for parents, elders, those with titles, etc., on which indices both Americans and Europeans have gone *down* over the decades, but the Europeans much more so, in the late 1990s showing themselves significantly lower than Americans on such measures, (c) indices dealing with "stoicism" (e.g., items Q3, and Q11) showing a decline for both Europeans and Americans, especially the latter, and (d) Americans showing a remarkable continuance of the trend toward a sharp secular decline in achievement motivation as well as *both* individual and one-on-one, as well as group, activities.

Summary of the Internal Aspects of the Study: Hypotheses and Findings

This study is offered as having both a limited, internal and a wider external dimension. Internally, the findings were related to the specific hypotheses of a limited domain. This was

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[45] It should be noted that this European egalitarianism in forms of address in post-modernity is *not* equivalent to familiarity. That is, one eschews all titles *except* for a universal Mr. and Ms., but does *not* ordinarily address people other than friends, relatives, or close colleagues by first name or nickname. The trend toward familiar forms of address which spread to the U.S. from certain British circles around 1905/10, and then from there to the European continent in the 1950s and 60s, has largely retreated again in most of Europe in the 1980s and 90s.

through what was above called "a narrow window" across but two generations, in only a few selected areas of the Western World, on a limited segment of the extended phenotype of *Homo sapiens sapien,* on what was here referred to as "cultural heritage" – that is the net survivor of the interaction between vertical cultural transmission and horizontal cultural transmission. In this limited arena, the study presented hypotheses as to a proposed connection between a waning of parental presence, of connecteness to traditional hierarchies, and of the "written word" (fairy tales as well as reading in general) for children, on the one hand, and the rise of a peer and "televideo"-dominated childhood, on the other. Parental presence, hierarchy, and "writ" were hypothesized to lead to relatively more sophisticated functioning and maturity in adults, whereas a childhood filled with high peer and "televideo" components was suggested to be predictive of a comparatively less mature and less idealistic, adult personality, though one more egalitarian and group-oriented.

Certain important public influences, such as those contributed by the various functions exercised by the school, were, on the other hand, largely ignored. The issue is addressed below, in the section on "Limitations of this study and unanswered questions."

Hypotheses and Findings: A Recapitulation

The evidence presented above does in most respects support the argument for *a clear conflict* between the "vertically-connected" and the "horizontally-connected," as predicted by hypothesis 1.

With noted exceptions, the evidence is similarly compelling, as to the bolstering of hypothesis 2, that is, the pivotal role of the parents in this, and of the then following hypotheses. One possible explanation for a few of the exceptions, and some "counterintuitive" results, may be in a confounding of variables. For instance, as one examines the patterns of PC loadings, one notes that grandparental presence almost always goes with (a) a rural (rather than urban)

background and (b) large families with many siblings. Thus, some of the findings showing high correlations with grandparental presence, may, in fact, be at least partially more correctly attributable to *rural* presence. This is because, especially in the selected small group of $n = 132$ subjects (and their parents) interviewed during the final two years of this study, there was a fairly high (especially in the U.S. and Switzerland) *rural* component. It is extremely rare to have grandparents live in one's home in a modern urban setting in the West. The two remaining exceptions are: (a) farm families and (b) foreign (non-First World) and as yet unintegrated immigrants. About one-third of the (132) final participants (on which we have completed questionnaires from both generations) were either of farm- or very-small-community (village) background or foreign immigrants. When the subject base is large, the pattern of grandparental influence is still to be noted, but here it has shrunk to more marginal status (though still strong in the positive correlation with PC1_41).

As to the *greater versus lesser resemblance* predicted by hypothesis 4, this is supported by the findings, although the results are more conclusive for some categorises of data. It is repeated here once more, that one should not be surprised that the adulthood data of the two generations in the present study show fairly different profiles: Young adults of age 18 ($i + 1$ generation) cannot be expected to show the same profile as adults in their 40s, 50s, and 60s (mean age = 46 in the i generation).

The most prevalent responses determine the strengths (rank) of the principal components. Hypothesis 7 ("critical mass" effect) is supported indirectly and unfortunately by the fact that the strongest components for the most robust adult components are clearly marked by that type of intolerance and cynicism which our analyses have decisively shown to be the effect of lack of vertical, and strength of horizontal, cultural transmission in childhood.

That paternal and maternal presence have distinct, and not equal or interchangeable, influences, is marked by repeated patterns of findings. Paternal presence, especially, is shown to correlate with the offspring's higher maturity, achievement motivation, and preference for

individual or one-on-one activities – but also with *less* letter writing. Higher paternal presence – *but only during the very early childhood years (1, 2, 5)* – is also found to correlate positively with greater differentiation (field independence) competence.

Similarly, as an over-all pattern, a positive correlation with achievement motivation and also with a preference for individual or one-on-one activities (over group activities) is only true for paternal, and not for maternal presence during the subject's formative years. Caveats as to possible confounding factors in these interpretations (e.g., mistakingly attributing to paternal absence what really is the effect of lack of family intactness) were discussed.

On the other hand the presence of *both* parents correlated positively at all age brackets with the subsequent erudition or knowledgeability of the young adult offspring. The analyses also showed that the mere presence in the home of the child of both parents *is not sufficient* to ensure that vertical transmission takes place and takes a hold. Thus it was discussed above that in several instances (of which PC4_35 is a notable example), strong parental presence is by itself insufficient – and is overcome by other influences. On the other hand, the data point to the strength of an overall gamut of highly "vertical" or parwrit activities and influences, predicting a highly "vertical" personality adult profile – *even if parental presence is taken out of the equation* (as in the correlations with PC5_35).

The analysis applied here is one of correlations. Correlation is not regression, and is blind as to direction. It is thus conceivable that the memes of the children flow to the parents, rather than the reverse. Nevertheless, the work of most prior investigators and of the basic "Bowlby ethological model" as well as the Cavalli-Sforza/Feldman model, advances the presumption that the most typical flow of "vertical cultural transmission" is from the i generation to the $i + 1$ generation, and not the reverse.

The Wider or External Dimensions of the Study: A -- Toward Integrating the Models

The circumscribed arena of hypotheses and findings of this study was offered, however, within a wider theoretical framework. The study may be said to have been anchored in three premises. These were (1) that the basic laws of preservation, mutation, evolution, and extinction are universal with even the most extended phenotypes of all biological entities not exempt therefrom; (2) that genetic theory provides the most prototypical and well-worked out schema of such laws; and (3) that the concepts as to the need for barriers and relative isolation of subgroups within the genetic pool and the avoidance of panmixia, as worked out most completely in the schemata of Sewall Wright – should also be applicable to human cultural transmission and the preservation of cultural heritage of a civilization and of diversity within and outside of such.

This more extended design proposed a more general theory with a conflict model at its center, integrating a memetic analogue of the S. Wright island model with the genetic analogue model of cultural transmission of Cavalli-Sforza, Feldman, et al. as applicable to *vertical* transmission, the epidemiology and fusion theory model as being applicable to *horizontal* transmission, with the analogues of Wright's isolation by distance, island, and deme constructs as defining the interaction between the vertical and horizontal vectors. The final proposed ingredient to the integrated model was in a definition of the dynamics of interaction. Such were held not to be linear, but to be subject to a critical mass or inflection moment, constituting a punctuated equilibrium-like rapid, complete shift, currently perhaps almost completed, whereby the vertical is in a sudden flip overturned by the horizontal. Clearly, this field theory goes beyond what may be inferred from the data on two generations of this study.

This integrated model or theory is offered, however, to permit the wider, external dimension of the study. In this a framework is offered within which the findings of this study and of a long tradition of studies drawing similar conclusions as to childhood rearing practices at least to the middle of the 20th century, can be reconciled on the one hand with the survival of pockets of "oldfashioned" isolated subcultures throughout the world, and on the other, with the very

different perspective investigators like Harris have gleaned from current mainstream data. What I propose is that *they are, all of them, correct* in their conclusions. By "all" I mean from the neo-Freudians and Bowlby, to Stephen Bertman and Alisdair McIntyre, and finally to such as Judith Rich Harris. Because it all depends on (a) where one looks, (b) the epoch or cohort one focuses upon, and (c) the statistics that are employed. Looking at more or less isolated non-mainstream socio-cultural communities (Tibet, Hutterites, Old Order Amish, certain fundamentalist and orthodox religious groups), one notes the continuing supremacy of vertical transmission. Looking at the overwhelming majority of the youth of the typical New Jersey towns in the 1990s Judith Rich Harris is familiar with, one would conclude, with Harris, that there is just about no parental influence in personality formation, and what isn't genes, is surely peers. Harris would not have found this, I would venture to say with a certainty for which I cannot today marshall direct evidence, had she looked at the same New Jersey towns, at the time of World War I! Cultural cohort differences have in most of the world -- for the first time in history -- become far greater than cultural differences related to geographical distances, mountain ranges, jungles, deserts, language, religion, or national frontiers. That is perhaps because of a greater isolation or uprootedness of this present cohort from previous generations. At the same time, however, because the previously protective buffer of geographical and other distance has been completely permeated by globalization and the tele-network, the final vestiges of heterogeneity and diversity of subcultures or deme-analogues cannot withstand the pressure. With the passing of much diversity, one also notes in the response patterns found in most of the subjects herein, a lack of nostalgia for the past, and of veneration for elders, love of literature, studying and ... fairy tales. On the other hand, even when comparing only the two generations under our microscope here, we note the galloping growth of horizontal transmission. In the space of just one generation, parental presence has dwindled significantly and sleepovers have doubled. All indications indicate that the trend continues. In spite of the dwindling parent-child bonds, one notes the persistence of quite significant cross-generational correlations on certain specific indices (Appendix XI, p. 271).

The Wider or External Dimensions of the Study: B -- Limitations and Unanswered Questions

This study has certain weaknesses, as many studies do. One principal weakness is that it is limited to two generations. However, using some of the very fragmentary data of the McClelland study of the early 1950s, and a statistically insufficient subset of responses to just a few questions by but four dozen grandparental figures ($i - 1$ generation),[46] and looking as well at prior work by some anthropologists (e.g., Margaret Mead) and the work of some historians (e.g., Toynbee, Toffler, Bertman) – one cannot fail to note that all point to the same trend that one sees here between the two generations studied.

A second weakness of the study is the small size of the parental (i) generation sample. Not only is this subsample too small, but, as pointed out above, it is probably not entirely representative. This is because the $i + 1$ offspring subset ($n = 132$), when compared to the larger $i + 1$ sample of $N = 1158$, from which it was drawn, is clearly different, the subset differing markedly more than the larger sample, on most indices, from the mean scores of the i generation herein analyzed, as well as from the mean scores of prior studies (Küsell, 1993/4, McClelland, et al., 1958).

A third weakness of the study lies in the lack of comparability of the 18-year old "young adults" with the "adults" of their parental generation – almost three decades older. The only way to address this, would be with a follow-up study, in about ten years, to see how the values, behavioral preferences, etc. of the $i + 1$ generation will differ, when they will be in their thirties[47]

A fourth weakness of the study is that the data generated did not permit addressing the validity of all aspects of some of the hypotheses (or corrollaries).

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[46] 47 individuals over the age of 65 (6 of these were "parent-surrogate" grandparents) were also asked two questions (fairy tales and sleepovers). Not one reported any sleepovers. The sample size was considered too insignificant to merit treatment in this dissertation.

[47] This is theoretically possible, and in fact planned ... as I obtained the names and addresses of well over 80% of the pupil-subjects, also in order to be able to send each of them a copy of the abstract of an article which I presumed would result from this study.

A final and important weakness of the study lay in its failure to adequately predict and address the role of "the school" in determining the relative erudition, maturity, etc. of the subjects. KINDVAL, or the index of school quality or calibre, turned out to be clearly the single-most important predictor of adult personality. It was closely followed by TOTAL, or the total number of languages learnt by the subject. However, to a great extent, "number of languages learnt" is but a function of the quality of schooling (KINDVAL and TOTAL correlate .7 with one another).[48]

As stated above, the "school" represents a kind of mixture of "horizontal," "oblique," and occasionally "vertical" cultural transmission for a pupil. These are difficult to tease apart. One may, however, conjecture the following interpretation within the "integrated model" of this study. Development of an individual is not necessarily uniform across all dimensions. Some outside forces (bringing cultural transmission) may be largely informational or intellective (e.g., "the school"), in domains where it is not too critical whether the transmission is one-on-one or one-on-many (the latter of which is often the case in oblique transmission). In other domains (perhaps emotional development or maturation?) a personal bond between parent and child (or parent-surrogate and child) may be essential. So the school may educate (informationally), but have less of a formative role in such as character formation. The outcome might be a lot of good *informational* culture or knowledge, but without adequate criteria or competence to *evaluate* (discriminate, differentiate) what one has learned, or derive *meaning* therefrom.

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[48] It must be emphasized that the schools in which these interviews and tests took place were *not randomly picked*, and are thus not really completely representative of the population at large! Over three-quarters of the American schools were schools which had obtained the coveted "Blue Ribbon" certification, as truly outstanding schools, from the U.S. Department of Education (who introduced me to the school principals and headmasters). Less than 2% of American schools are in this "elite" category. Similarly, over half of the European schools involved in this study were "Gymnasiums," or the cream of the academic crop there. Both Blue Ribbon schools and Gymnasiums stress the learning of several languages much more than most "ordinary" schools. This thus creates a built-in contrast between the students of these schools (in most cases with a high parental SES) and the less privileged students of other schools.
In a slightly smaller subset of students, "many languages" are an incidental byproduct of parental migration.

This would lead to *uneven* development – perhaps even as rule, rather than as an exception. This might also be the explanation for the fact that although on the one hand KINDVAL correlates very highly positively with language acquisition during childhood and with erudition of the young adult, it also correlates positively with various variables putatively measuring egalitarianism, and negatively with indices of respect (for parents, elders) and dedication (belief in lifelong friendship).

Possibly related to this are the findings of Allport (discussed in the introductory chapter above) that children who have a *number of changing caretakers*, fail to develop discriminatory or differentiating skills. Getting one's cultural transmission from many teachers, who change from year to year, follows the paradigm of "shifting caretakers." Finally, in terms of the fundamental analogue herein, of Wright's island and distance model, a model calling for insularization of small deme-like subpopulations, the very school setting, would make for attrition of needed barriers, of the needed insularization to ward off the effects of excessive horizontal cultural transmission ("immigration," "mutation"). Peers and egalitarianism, and not teachers and respect, abound in the modern school setting.

The Wider or External Dimensions of the Study: C -- Concluding Comments and Some Conjecture

In the opening pages of this dissertation I cite Lorenz and Bowlby as to the vital importance of parental bonding in ensuring individual maturation and continuance of cultural heritage. In connecting individual development and cultural evolution of the population, I cite Gottlieb and his arguments for "an integration of individual development into the population-genetic model" and for the importance of shifts in behavior, particularly when involving "rearing experience" of the young. Unlike Gottlieb, who proposes a mechanism of neophenogenesis, in which genetic and "morphological change [may be] initiated by behavioral change alone"

"without ..." requiring a change in ecology or environment, I propose that a paradigmatic shift in such as the transmission of human cultural heritage may indeed be caused by a dramatic change in "rearing experience," but that such is *mediated* by an intermediate variable. This intermediate variable, I argue, *is* a change , and a "punctuating" one, at that, in the autogenerated ecology or environment of the human being being of today, as opposed to what obtained but a few generations ago. This makes my dissertation one of history and historical facts and shifts as well. More specifically, in this link of my argument, I cite in the opening chapter hereof, the historical evidence presented by such as Margaret Mead, Toffler, and Bertman on the great changes during the past century in the ecology and environment of our species, as opposed to the world of but four to eight generations ago. I argue not that industrialization and modernization have been "bad," but rather that together with all the benefits of modernity and the alleviance of the drudgery of the "human station," the great autogenerated changes have been accompanied by "*largely unforeseen side- or after-effects.*"

I then cited Durham on the accompanying attrition of diversity in human cultures in this post-modernity.

Although I called this an "interdisciplinary" study, I stressed that the farther-reaching aspects of the thesis, did represent extensions, and analogues, of biological theory. Here one must resonate with Sewall Wright, who lamented that in relating biology to the the wider, nonbiological world, "the biologist is continually in trouble," being interposed between the "humanists and social scientists," on the one hand, and the "opposite pole" of "control by impersonal laws of nature" of the "physicist and chemist."(Wright, 1977, p. 79) Within Wright's over-all theory[49] I chose for the "cornerstone" of this dissertation, his model calling for "virtual

[49]In which he interprets "evolution as a continually shifting balance, spatially and temporally, among ... the pressures of mutation, selection, and migration ... in conjunction with the effects of random drift composed of random variations in these pressures and of local accidents of sampling. These provide material for intergroup selection at a level, the interaction system, higher than that provided for by mass selection of individual mutations." Wright, 1977, p. 86.2

isolation" of small subpopulations to ensure survival of diversity and of "orthogenetic" evolution (as opposed to bradytely).

Wright himself applied such as his path flow model, outside of genetics proper, to areas like ecology and even human cultural transmission. I have herein, by incorporation of the other models cited, attempted to assemble findings in a humble further extension of Wright's argument.

It is *possible* – and just a wee bit more than rank conjecture – to suggest that a traditional home-, parent-, fairy-tale, and reading/writing-centered upbringing has shifted from characterizing a substantial portion (perhaps some 25% to 50%) of the children of the middle classes of the Western World a century or more ago, to a significantly lesser portion (perhaps some 10% to 20%) a half century ago, and to an even smaller fraction today. That might indicate a trend here – something difficult to assess or predict from this "narrow window upon two generations." This is, however, offered not as a finding, but as an explanation, which would be consistent with the general theory from which the specific hypotheses herein *also* stem. This would permit the inference that any remaining small number of vertically-centered offspring might constitute an "endangered species," and a perhaps gradually disappearing one. This is, however, leaving the arena of interpretation, and entering the realm of conjecture.

However, the integrated model or field theory offered herein permits the reconciliation of these data and inferences, and allows for the *possibility* of such a trend, and the possibility that much of the $i + 1$ (current) generation of young adults may indeed have moved *past that critical or inflection point*, where the horizontal preempts the vertical.[50]

[50] Which, in terms of the model (Figure 2-1, p. 57, above), would imply that we have as a society, as a whole, and on the whole, moved beyond the inflection point, to reach the area (to the extreme right of the curve) very close to the "no barriers – panmixia" limit on the ordinate, and deeply into the area of horizontal dominance on the abscissa (time) dimension.

POST SCRIPTUM:

Each summer, since before World War II, the Boston Symphony Orchestra moves to its summer location, at Tanglewood, in the Berkshire mountains of western Massachusetts. There, "under the stars," I have heard over many decades, some of the world's most beautiful music, conducted by some of the world's greatest conductors. When I went to spend a few days there, in 1999, I noted and remarked to my companion: "This is strange, I remember that 40 and 50 years ago, 80% or 90% of the audience were young people in their teens and twenties. Now I see the precise opposite, 90% of the thousands here are in their 60s, 70s, and 80s, and less than 10% are under 45, and most of these few, I note, are here with what appear to be their parents or grandparents..." By coincidence, three days later *The New York Times* ran a feature article on Tanglewood, the title stating that the "Face in the crowd" had become "grandmotherly," focusing on precisely that lack of the young in the audience, and the inability of Tanglewood (and other similar enterprises) to attract the youth of today. It is unfortunate that I am not permitted to employ this footnote as a peroration, to rest a case, on the possible ascendency of what may at least culturally be a successor species to *Homo sapiens sapiens*.

APPENDIX I

History of interviews conducted with pupils: Roster of subjects and schools

Group Number	School name	"Kind"/"Evaluation" of school	Location of school/interviews	Date	n $i+1$	
101	Gymnasium Stegliz	1/4	Berlin FRG	12/99	42	
102	Friedensburg Oberschule	3/2	Berlin FRG	12/99	20	
103	Walter Gropius Schule	2/3	Berlin FRG	12/99	22	
104	Sophie-Scholl Oberschule	2/3	Berlin FRG	12/99	16	
105*	Cass Lake School	6/1	Cass Lake, MN USA	11/99	30	
106*	Bug O Nay Geshig School	8/0	Cass Lake, MN USA	11/99	19	
107	River Dell H. S. (BRS)	6/1	Oradell, NJ USA	05/99	32	
108	Weir High School (BRS)	6/1	Weirton, WV USA	05/99	46	
109	Mainland Regional H.S.	6/1	Linwood, NJ USA	05/99	41	
110	Byron H. S.	6/1	Byron, MN USA	11/98	35	
111*	Bug O Nay Geshig School	8/0	Cass, Lake, MN USA	11/98	16	
112	Thomas More H. S.	7/2	Milwaukee, WI USA	11/98	22	
113	Highland Pk. Sr. High School	6/1	St. Paul, MN USA	11/98	37	378
				"Final third":		378
114	Werner-Heisenberg-Gymn.	2/3	Heide, S-H, FRG	08/98	50	
115	Lauenburgische Gelehrtensch.	2/3	Ratzeburg, S-H, FRG	08/98	26	
116	Herman-Tast-Schule	2/3	Husum, S-H, FRG	08/98	23	
117	Altes Gymnasium	1/4	Flensburg, S-H, FRG	08/98	46	
118	Carl-Friedrich-Gauss-Gymn.	2/3	Schwandorf, Bav., FRG	06/97	53	
119	Bundesgym. & Realgym. B./M	2/3	Bruck/Mur, AUSTRIA	06/97	47	
120	Linz Gymn. (Ramsauer St.)	2/3	Linz, AUSTRIA	05/97	32	
121	Bundesrealgym. Linz (Ham. St)	2/3	Linz, AUSTRIA	05/97	26	
122	Kantonsschule Kolleg. Schwyz	2/3	Schwyz, (SZ) CH	05/97	28	
123	Kantonale Mittlesch/Koll. K-B	2/3	Altdorf (URI) CH	05/97	33	
124	Baltimore City College H. S.	6/1	Baltimore, MD USA	10/95	49	413
				"Final two-thirds":		791
125	Indiana High School	6/1	Indiana, PA USA	04/95	26	
126	Kantonsschule im Lee	2/3	Winterthur, (ZH) CH	01/95	15	
127	Gymn. Hohe Promenade	2/3	Zurich, (ZH) CH	01/95	35	
128	Bern Gymnasium	2/3	Bern, (BE) CH	01/95	40	
129	Gymnasium Starnberg	2/3	Starnberg, Bav., FRG	01/95	27	
130	Staatl. Gymn. Kaufbeuren	2/3	Kaufbeuren, Bav., FRG	01/95	23	
131	Otte von Taube Gymnasium	2/3	Gauting, Bav., FRG	01/95	34	
132	Bettina von Arnim-Gymnasium	3/2	Magdeburg, S-A, FRG	01/95	41	
133	Gymn. an der Rusternbereite	3/2	Köthen, S-A., FRG	01/95	36	
134	Gymnasium S-O (Tolstoiallee)	3/2	Bernburg, S-A, FRG	01/95	28	
135	Humboldt Gymnasium	2/3	Potsdam, Bran., FRG	01/95	29	
136	Potsdam/Michendorf Schule	3/2	Potsdam/Michend., Bran., FRG	01/95	33	367
				"All $i+1$ subjects":		1158

NB: There were 36 groups, but 35 locations. One school was visited twice (Bug O Nay Geshig).
* Approx 50% of pupils at Cass Lake School & 100% at Bug O Nay Geshig School were Ojibwe

APPENDIX II

QUESTIONNAIRE ADMINISTED TO PUPILS

DEMOGRAPHIC INFORMATION (confidential/anonymous)

The information requested below is needed to enable us to arrive at a correct evaluation and comparison of your responses, those of the other participants in this survey, and of those who participated in a similar survey four decades ago.

(CONFIDENTIAL) **CODE** (in lieu of your name) (Any combination of four letters or numbers chosen by you now -- which you should *not* forget during the coming hours, as you will need it again later for your confidential identification in each of the following parts of this survey):

__ __ __ __

SEX(M/F): ___ PLACE OF BIRTH (Town, State, Province, Country):_____ _____ _____

YEAR & MONTH OF BIRTH (but *not* exact date): _____ (Year) _____ (Month)

FOREIGN LANGUAGES (learned in school or otherwise): _____

LANGUAGE(S) normally spoken at your (parents') home: _____

RELIGIOUS AFFILIATION ... *OF FATHER*: _____ *OF MOTHER*: _____

PROFESSION ... *OF FATHER*: _____ *OF MOTHER*: _____

WHO LIVED WITH YOU (IN YOUR HOME) WHEN YOU WERE:

		1 year old?	*2 years old?*	*5 years old?*	*10 years old?*	*15 years old?*
	CHECK OFF APPLICABLE BOXES					
Natural (biological)	*Father*	☐	☐	☐	☐	☐
	Mother	☐	☐	☐	☐	☐
Step or foster	*Father*	☐	☐	☐	☐	☐
	Mother	☐	☐	☐	☐	☐
	PUT APPROPRIATE NUMBER INTO EACH BOX					
HOW MANY?	*Grandfather(s)*	☐	☐	☐	☐	☐
	Grandmother(s)	☐	☐	☐	☐	☐
HOW MANY?						
Full OLDER brother(s)		☐	☐	☐	☐	☐
Half, step, or foster OLDER brother(s)		☐	☐	☐	☐	☐
Full YOUNGER brother(s)		☐	☐	☐	☐	☐
Half, step, or foster YOUNGER brother(s)		☐	☐	☐	☐	☐
Full OLDER sister(s)		☐	☐	☐	☐	☐
Half, step, or foster OLDER sister(s)		☐	☐	☐	☐	☐
Full YOUNGER sister(s)		☐	☐	☐	☐	☐
Half, step, or foster YOUNGER *sister(s)*		☐	☐	☐	☐	☐
HOW MANY? *Other Relatives*		☐	☐	☐	☐	☐
Other Nonrelatives		☐	☐	☐	☐	☐

QUESTIONNAIRE ON VALUES, BELIEFS, OPINIONS ...

Here are some statements and questions that people have different opinions about. There are, in most cases, no "right" or "wrong" answers. Please read each item and decide *quickly* how you feel about it or what your view on the issue really is. Then fill in the appropriate answer. Please put down your first impression.

Part A

For the following statements, please mark each one in the appropriate blank on the left, according to the amount of your agreement or disagreement, by using the indicated scale:

+3 = *Strong support, agreement*

+2 = Moderate support, agreement

+1 = Slight support, agreement

-1 = Slight opposition, disagreement

-2 = Moderate opposition, disagreement

-3 = Strong opposition, disagreement

+3 = Strong support, agreement
+2 = Moderate support, agreement
+1 = Slight support, agreement
-1 = Slight opposition, disagreement
-2 = Moderate opposition, disagreement
-3 = Strong opposition, disagreement

☐ ☐ ☐ ☐ ☐ ☐ 1. No sane, normal, decent person would ever think of hurting the feelings of a good friend.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 2. Nowadays, with world conditions the way the are, the wise person lives for today and lets tomorrow take care of itself.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 3. It is better to go without something than to ask a favor.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 4. I set difficult goals for myself which I attempt to reach.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 5. There is no reason why husbands and wives should not have exactly the same duties and chores, insofar as possible.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 6. When I see someone working in an ordinary unskilled job, I often wonder why such a person doesn't try to do better in life.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 7. Planning only makes a person unhappy since your plans hardly ever work out anyway.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 8. We would have a lot less problems in our country, if it weren't that so many of the new foreign immigrants are so uncivilized.
+3 +2 +1 -1 -2 -3

+3 = Strong support, agreement
+2 = Moderate support, agreement
+1 = Slight support, agreement
-1 = Slight opposition, disagreement
-2 = Moderate opposition, disagreement
-3 = Strong opposition, disagreement

☐ ☐ ☐ ☐ ☐ ☐ 9. There is no such thing as a really permanent, lifelong friendship. Your friends change with circumstances.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 10. Homosexuals have equal rights. So they (*i.e.*, two people of the same sex) should be allowed to marry one another.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 11. If you get bad news it is better to hide what you feel and behave as if you didn't care.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 12. Equality has been stressed too much. We should focus more on the inequalities of status, culture, character, capacity, age, titles, etc.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 13. I work like a slave at everything I undertake until I am satisfied with the results.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 14. Taxes and medical costs are rising because those who work have to more and more subsidize others who don't produce and earn enough.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 15. There are some people, like great artists and musicians, who can be forgiven for not being considerate of others, kind to the poor, etc.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 16. People who are HIV+ (and thus have the potential for AIDS) should be barred from jobs involving physical contact with members of the public.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 17. There is hardly anything lower than a person who does not feel a great love, gratitude, and respect for his parents.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 18. Equal legal and political rights are not enough. Since people are of equal value they should be esteemed and treated equally.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 19. Some people take things too seriously: it's always better to forgive and forget, and to let bygones be bygones.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 20. It would irritate me very much to have a watch or clock which was off by several minutes every day or so.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 21. Sometimes I feel like crying, when something painful happens to someone in a book or movie I have become involved in.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 22. One should not tell people facts they don't want to hear: being tactful is more important than being candid.
+3 +2 +1 -1 -2 -3

+3 = Strong support, agreement
+2 = Moderate support, agreement
+1 = Slight support, agreement
-1 = Slight opposition, disagreement
-2 = Moderate opposition, disagreement
-3 = Strong opposition, disagreement

☐ ☐ ☐ ☐ ☐ ☐ 23. I should like my children to visit the places in which my parents and grandparents grew
+3 +2 +1 -1 -2 -3 up.

☐ ☐ ☐ ☐ ☐ ☐ 24. When someone is born, the success such person is going to have is already in the cards,
+3 +2 +1 -1 -2 -3 so one might as well accept it and not fight against it.

☐ ☐ ☐ ☐ ☐ ☐ 25. Vicious criminals (who have murdered or hurt people) should be hung from lampposts
+3 +2 +1 -1 -2 -3 in their own neighborhoods.

☐ ☐ ☐ ☐ ☐ ☐ 26. One should be friendly and familiar with only a handful of people, and distant and formal
+3 +2 +1 -1 -2 -3 with most.

☐ ☐ ☐ ☐ ☐ ☐ 27. My political opinion is easily swayed by editorials I read.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 28. Great cultural figures are never ahead of their time: they *are* their time. It is the masses
+3 +2 +1 -1 -2 -3 who are behind their time.

☐ ☐ ☐ ☐ ☐ ☐ 29. When I have promised something which then turns out more risky and costly than foreseen,
+3 +2 +1 -1 -2 -3 I am certainly justified in breaking my promise.

☐ ☐ ☐ ☐ ☐ ☐ 30. Someone with money cannot really learn how to behave in polite society if such
+3 +2 +1 -1 -2 -3 person has not had the proper upbringing.

☐ ☐ ☐ ☐ ☐ ☐ 31. Ultimately it's more important to be rich and successful than to be highly educated and .
+3 +2 +1 -1 -2 -3 cultured.

☐ ☐ ☐ ☐ ☐ ☐ 32. Respect is due an older man no matter what kind of a person he is.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 33. One should always use simple language everyone can understand, even if this makes the
+3 +2 +1 -1 -2 -3 meaning a little less precise.

☐ ☐ ☐ ☐ ☐ ☐ 46. A child should never be asked to do anything, unless one also tells the reason for the request..
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 53. Good fortune will not bring satisfaction if one lacks the companion to share it with.
+3 +2 +1 -1 -2 -3

Part B

For each of the following statements, please check off *only the one box* (a, b, c, etc.) *which is most in agreement with your views:*

34. When I go traveling, or on a picnic, or out to lunch or dinner, I prefer to go

- ☐ (a) by myself;
- ☐ (b) with one other person or with members of my family;
- ☐ (c) with a group of (five or ten) friends;
- ☐ (d) with a larger group (of perhaps 20 or 30), so that one gets to meet new people.

35. When I have been promised something by a certain time, and it's either not ready on time, or the quality leaves Something to be desired, I

- ☐ (a) get angry and never use such people again;
- ☐ (b) make the best of it, since top quality is hard to get nowadays, and in the world of today it's difficult to. find punctual people.

36. Within the past three or four years, as to my most intimate experiences (*e.g.*, my sexual experiences, my dreams, etc.), I

- ☐ (a) am very open about them, and relate details freely, to, or in front of, just about anybody, since I am not a very secretive person;
- ☐ (b) am only willing to share such details with my friends (at the most some five or ten people);
- ☐ (c) am only willing to tell my very closest friends and confidants (*i.e.*, not more than one or two people in the world);
- ☐ (d) regard such matters as completely private, and would not ever be willing to discuss them with anybody in the world.

37. When you speak to an adult you know fairly well (someone your age or older) *about* your father or mother, or about one of their parents, do you sometimes use the terms "Mom," or "Dad" (or similar expressions of familiarity such as "Ma," or "Pa," or "Pop," or "Daddy," etc.)?

☐ (a) Yes ☐ (b) No

Or do you *invariably only* use the terms "mother" and "father"?

☐ (a) Yes ☐ (b) No

Or do you sometimes refer to your own, or someone else's, parents by first name or nickname?

☐ (a) Yes ☐ (b) No

38. Some people are brought up more realistically than others? Were you told or read fairy tales, by one of your parents or a grandparent, when you were about three, four, or five years old?

☐ (a) Yes ☐ (b) No If *yes*, about how often in a year (about twice, 5, 10, or 100 times)? _____

Had you read quite a few fairy tales by yourself, by the time you were 12 or 13?

☐ (c) Yes ☐ (d) No If *yes*, about how often in a year (about twice, 5, 10, or 100 times)? _____

Or had you frequently *seen* (movies, films, videos, etc.) fairy tales in the first 12 or 13 years of your life?

☐ (e) Yes ☐ (f) No If *yes*, about how often in a year (about twice, 5, 10, or 100 times)? _____

39. You call someone on the telephone at his home. A child answers. It is possibly the child of the man you are attempting to reach. In asking for the person to whom you wish to speak, would you say

☐ (a) "May I please speak to Mr. [last name]?" or

☐ (b) "May I please speak with [first name]?"or

☐ (c) "May I please speak to your father?" or

☐ (d) "May I please speak with your Dad [or 'daddy,' or similar term]?"

Part C

Please, making your answers as short and to the point as possible, respond to the following questions in the appropriate places:

40. What are the three things you would most like your children to learn?

_____

_____

_____

41. Please list here any activities (clubs, hobbies, athletics, etc.) you are engaged in (outside of any regular school or job activities):

_____ _____

_____ _____

_____ _____

_____ _____

42. Assume that you are 18 or 19 years old, and that on your birth certificate your name appears as William A. Humboldt / Elizabeth A. Humboldt

At home everyone calls you Bill/Betty, except for your father who calls you William/Elizabeth. All your friends and relatives call you Bill/Betty (except for your best friend who calls you Willie/Lizzy). Of course, when you receive mail it is sometimes addressed to Mr. William A Humboldt / Miss Elizabeth A. Humboldt

(a) After you have asked a question in class, your new teacher/instructor asks you what your name is. Your answer would most likely be

_____.

(b) You meet a stranger (about five or ten years older than you) at a party. You would most likely introduce yourself as

_____.

(c) A few minutes later you hear one person address that stranger as "Bob"; but a minute later someone else addresses him as "Dr. Muller." (He had introduced himself to you as "Robert Muller."). How would *you* now address him?

_____

(d) At the same party you meet a child, 11 years old. She asks you what your name is, and what she should call you. You answer:

_____

(e) Finally, at this party you meet a priest. He is Father James Flannigan. (You hear a friend of his call him "Jim.") Father Flannigan addresses you as "Bill"/"Betty." How would you address the priest (after chatting with him for a while)?

_____

43. During the *past 12 months*, as regards friends or relatives you have *not seen in over two years*,

(a) Approximately how many letters have you written to such people? ("None," "Two or three," "50," etc.):

_____

(b) Approximately how many long distance telephone calls have you made to such people (during the past 12 months)? ("None," "Two or three," "50," etc.):

_____

(c) Approximately how many long distance telephone calls have your *received* from such people (during the past 12 months)? : ("None," "Two or three," "50," etc.):

_____

44. When you were about thirteen/fourteen years old, about how many times a year did you sleep over at a friend's place (instead of at home) or have a friend stay overnight at your home? (More than 20 times a year, only two or three times, never, etc.)

_____

45. When you were about thirteen/fourteen years old, not counting hours you were asleep or in classes at school, what percentage of your time did you typically spend

	Less than 5%	*10 to 20%*	*More than 30%*
(a) Watching television or movies?	☐	☐	☐
(b) At a computer?	☐	☐	☐
(c) Doing homework/studying?	☐	☐	☐
(d) Being at home*?	☐	☐	☐
(e) Being on the telephone?	☐	☐	☐
(f) Being with friends?	☐	☐	☐
(g) Reading?	☐	☐	☐

*If you were spending most of your time during those years in a boarding school or boarding institution, this question ("being at home?") refers to the time you typically spent in your home (house or apartment) during home visits.

51. Are any of the three friends with whom you spent most of your free time *five years ago* among the three people with whom you spend most of your free time *today*? How many (0, 1, 2, 3)? _____

54. If you are looking for advice about a very personal (intimate) problem, would you be more likely to go to someone (a) your own age? ☐ or (b) to an older person? ☐

55. Do you by and large feel yourself closer to the *culture* (customs, mores, and worldviews) of your parents and grandparents? ☐ Or to the (current) culture of people of your own age? ☐

56. Should parents be *primarily* models and educators of their children? ☐ *Or* their good friends and buddies? ☐

57. Do you believe a child will learn best from *older* teachers, who have more experience and can command more respect? ☐ *Or* from *younger ones*, where there is less distance between teachers and pupils/students? ☐

APPENDIX III

SOME EXPLANATORY NOTES AS TO THE SCORING OF THE BASIC QUESTIONNAIRE ITEMS AND THE T.A.T.'S

The demographic information from the face sheet of the Questionnaire was in a straightforward manner entered (with all other response items) into a summary response sheet as to each subject. 0 = absent, 1 = present if yes-or-no answer, or, a number if a precise number was asked for and given. However, certain additional entries were made or derived and for the following purposes.

Prior to October 1998, the demographic profile asked for, was slightly less detailed. For instance, whereas we now asked for exactly how many siblings there had been in the home, in each sibling category and at each of the specified times (at age 1, 2, 5, 10, and 15), we had before only asked whether there had been *any* siblings in the home at those age levels. Also, whereas we now asked for precisely how many grandmothers and grandfathers lived in the home of the child at the specified age levels, we had before only asked whether *any* grandparent had lived in the home at those ages of the child. So we entered the responses in two ways: the old way *as to any (yes or no)* and the new way, *as to precisely how many*. This would permit running analyses in two ways: one as all subjects ($N = 1158$) and the other only as to the final ($N = 378$) subjects tested since the more detailed questions as to sibs and grandparents had been posed.

The coding and evaluation of the schools was described above.

Males were coded = 0 and females = 1.

We similarly assigned numerical codes to Americans, Germans, Swiss, and Austrians and in each country a different code for those born there and those not born there. We similarly coded the languages spoken and learned, and used an 8-code classification for religion of the parents.

To evaluate *SES*, we used a profession-index, derived from McClelland et al. (1958), first rating each parent separately, and then assigning to each subject the higher SES of the two parents. The index follows:

1 = Unskilled workers

2 = Semiskilled workers (and following McClelland et al. we placed "housewives" and "homemakers" into this rubric)

3 = Skilled mechanical & public service workers, farmers, nurses (unless RNs), etc.

4 = Clerical, sales, small (family) businesspeople

5 = Minor professional & medium business

6 = Major professionals and major (top) business excutives

The *age* of the subject determined from the birth-year-to-testing-time span.

The following *rural/urban* score was assigned, in each case on the site of birth of the subject:

1 = Large cities – population of 1 million or more

2 = Smaller cities – populations of from 100,000 to less than 1 million

3 = Towns – populations of from 10,000 to less than 100,000

4 = Rural – small towns and villages – populations of less than 10,000

We derived the following index as to the degree of *mobility* (relocation) of the subject – simply by comparing the present abode (site of school) with the place of birth:

0 = no change (compared to present school location)

1 = change within country

2 = change cross-nationally, but remaining within the same cultural "orbit" (e.g., a Swiss moving to Austria, an American moving to Canada, an Australian to the U.K.)

3 = change cross-nationally and out of orbit, but still within "OECD" or "First World"

4 = change cross-nationally, but coming from "Second World"

5 = change cross-nationally, but coming from "Developing" or "Third World"

Q items 1-33, 46, and 53 (Likert-type or F-scale) were scored as in McClelland et al. and others,

7 = +3 = strong support, agreement

6 = +2 = moderate support, agreement

5 = +1 = slight support, agreement

(skipping 4, as customary)

3 = - 1 = slight opposition, disagreement

2 = - 2 = moderate opposition, disagreement

1 = - 3 = strong opposition, disagreement

From Q-items 37 onward, these are either forced choice, or open-ended. In the forced choice type, the first response was always scored 1, the second choice 2, and so forth, except that in the Q44 (sleepovers) and Q38 (fairy tale) items, a fuller reply as to exact frequence per annum, and in Q43, as to the past several years, was requested. To permit ready comparison with prior studies, responses to Q 34, Q36, Q37, Q 39, and Q42 (forms of address and self-identification) all dealing with greater or lesser familiarity versus formality, and open or group versus private preferences, were then recoded, to always give the highest number to most formal and distant and the lowest to least. A new items AQ37 was created, by averaging the responses for the three Q37 questions (Q37cd in reverse form).

The open-ended questions Q40 and Q41 were developed by the McClelland group in the 1950s, and were scored as they and elsewhere since then:

Q40: The subject's three answers were each coded as McClelland et al. did, as to being either egocentric or sociocentric. In addition, I also decided to score each as tc being either materialistic or idealistic.

Q41: The various activities were coded, as the McClelland group did, as being either "individual or one-on-one" or "group" activities. However, (and I have extensive correspondence on this with the late Professor McClelland who agreed with my judgement on this) I decided that some activities were simply "amorphous," or neither clearly group nor 1-on-1. When it is not

clear whether someone engages in an activity alone, with a companion, or with a group, such were coded "amorphous" rather than either "individual-or-one-on-one" or "group."

For the T.A.T.'s we used the traditional and complex scoring techniques (see chapter 3, p. 77, above) of the McClelland group for determining the amount of achievement-related and affiliation-related imagery present in a subject's stories. Such scoring is quite expensive and time-consuming, as it must always be made by two scorers (who score "blind as to the identity of the subject"), whose scores are finally averaged (and who must show high inter-scorer reliability). As the stories of all German, Swiss, and Austrian subjects were written in German, the two raters recruited for this had to have complete command of German. (Monetary limitations permitted this scoring only to be done for about the final three-quarters of the 1158 subjects.)

APPENDIX IV

NAME IDENTIFICATION AND CATEGORIZATION TASKS

YOUR (CONFIDENTIAL) PERSONAL CODE: __ __ __ __

IDENTIFICATION OF NAMES

You should not need more than about three minutes for the task of this page

With not more than about five or six words in each case, please identify each of the following twelve people (or as many as you can):

1)	MARCUS AURELIUS
2)	ALBERT EINSTEIN
3)	ARNOLD SCHWARZENEGGER
4)	WILLIAM SHAKESPEARE
5)	EMPEROR HIROHITO
6)	FAUST
7)	WOLFGANG AMADEUS MOZART
8)	GAUTAMA BUDDHA
9)	MARIE CURIE
10)	KARL MARX
11)	JOHANN GUTENBERG
12)	CHARLIE CHAPLIN

YOUR (CONFIDENTIAL) PERSONAL CODE: ___ ___ ___ ___

Please be sure to wait until you are asked to turn the page:

NAME CATEGORIZATION TASK

When you are requested to turn the page, please work rapidly, as you will have very little time, and you may *not* go back to a page, once you have been asked to turn it over!

NAME CATEGORIZATION TASK ——— PART I

Only four minutes are allotted for the task of this page

- By the use of *checkmarks* (in the boxes below) please sort the names of the people listed below into groups. In each case please put the names which *belong together* into the same group (category). In your classification (grouping) *you may use as few or as many (from two to six) categories as you wish.*

- Be sure that you use (check off) each name only once in such classification.

- After you have finished this classification of names of people, please give (on the indicated bottom line below) each of the categories you have created *a name or title (of not more than one or two words)*. One should be able to tell, from such name or title, what the people in such group have in common, and how this group of people differs from the other groups of names you have created.

		Categories					
	Names	I	II	III	IV	V	VI
1)	MARCUS AURELIUS						
2)	EINSTEIN						
3)	ARNOLD SCHWARZENEGGER						
4)	SHAKESPEARE						
5)	EMPEROR HIROHITO						
6)	FAUST						
7)	WOLFGANG AMADEUS MOZART						
8)	GAUTAMA BUDDHA						
9)	MARIE CURIE						
10)	KARL MARX						
11)	GUTENBERG						
12)	CHARLIE CHAPLIN						
	Name or title of your category:						

Please wait until you are asked to turn the page

NAME CATEGORIZATION TASK ——— PART II

Only three minutes are allotted for the task of this page

- Imagine that the twelve people you have met with before are to be seated together in a dining hall, for dinner. You are the one in charge of seating arrangements. You have three tables at your disposal to seat everyone. In other words, you have to decide whom you seat with whom, seating each person at one of these tables.

- *By the use of checkmarks, in the boxes below, please indicate who sits at which table.*

- Oh, one other thing: you yourself, as a thirteenth person, must also be seated by you at one of these tables.

		Seated		
	Names	At Table "A"	At Table "B"	At Table "C"
1)	MARCUS AURELIUS			
2)	EINSTEIN			
3)	ARNOLD SCHWARZENEGGER			
4)	SHAKESPEARE			
5)	EMPEROR HIROHITO			
6)	FAUST			
7)	WOLFGANG AMADEUS MOZART			
8)	GAUTAMA BUDDHA			
9)	MARIE CURIE			
10)	KARL MARX			
11)	GUTENBERG			
12)	CHARLIE CHAPLIN			
13)	*You yourself*			

Now please explain, (in not more than four or five words in each case) why you seated the people at ...

Table "A" together? _____

Table "B" together? _____

Table "C" together? _____

After you have finished the above, please do not go back to make any changes!

Please wait until your are asked to turn the page

NAME CATEGORIZATION TASK PART III

Only one minute is allotted for the task of this page

- Six of the twelve people you have met with on the previous pages must now go back (into the past, home, etc.).
- But the six others are willing to stay and spend a few days in your company (before they must also go back into the past, home, etc.)
- *Which six would you choose to stay with you for a few days?*
- *Again, just use checkmarks, please.*

	N a m e s	
1)	MARCUS AURELIUS	
2)	EINSTEIN	
3)	ARNOLD SCHWARZENEGGER	
4)	SHAKESPEARE	
5)	EMPEROR HIROHITO	
6)	FAUST	
7)	WOLFGANG AMADEUS MOZART	
8)	GAUTAMA BUDDHA	
9)	MARIE CURIE	
10)	KARL MARX	
11)	GUTENBERG	
12)	CHARLIE CHAPLIN	

Once you have completed the above, please do not go back to make any changes!

As soon as you have finished with this page, please turn the page over, and await collection of the pages.

APPENDIX V

T.A.T.'S EMPLOYED

YOUR (CONFIDENTIAL) PERSONAL CODE: ___ ___ ___ ___

PICTURE-STORY EXERCISE

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

On the following pages, you are to make up and write out a brief, imaginative story for each of eight pictures. You will have about four minutes for each story. There is one page for each story (in any case, please do not write more than about 100 words per story).

To help you cover all the elements of a story plot in the time allowed, you will find these questions repeated at the top of each page:

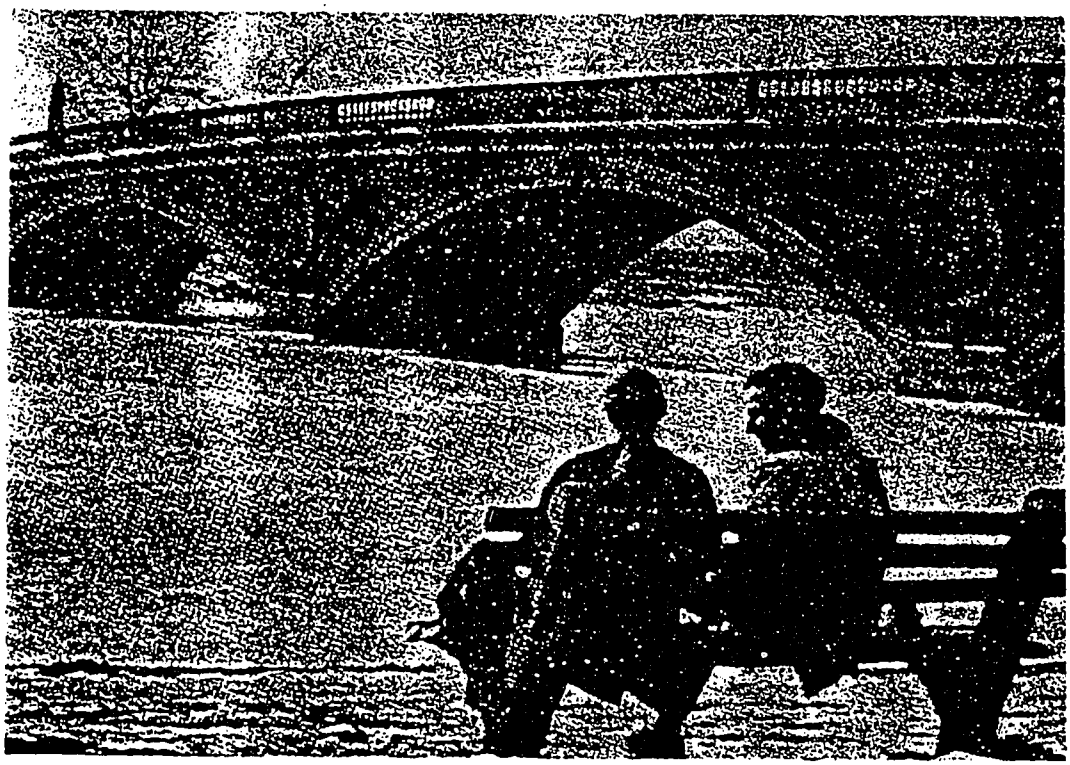
1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

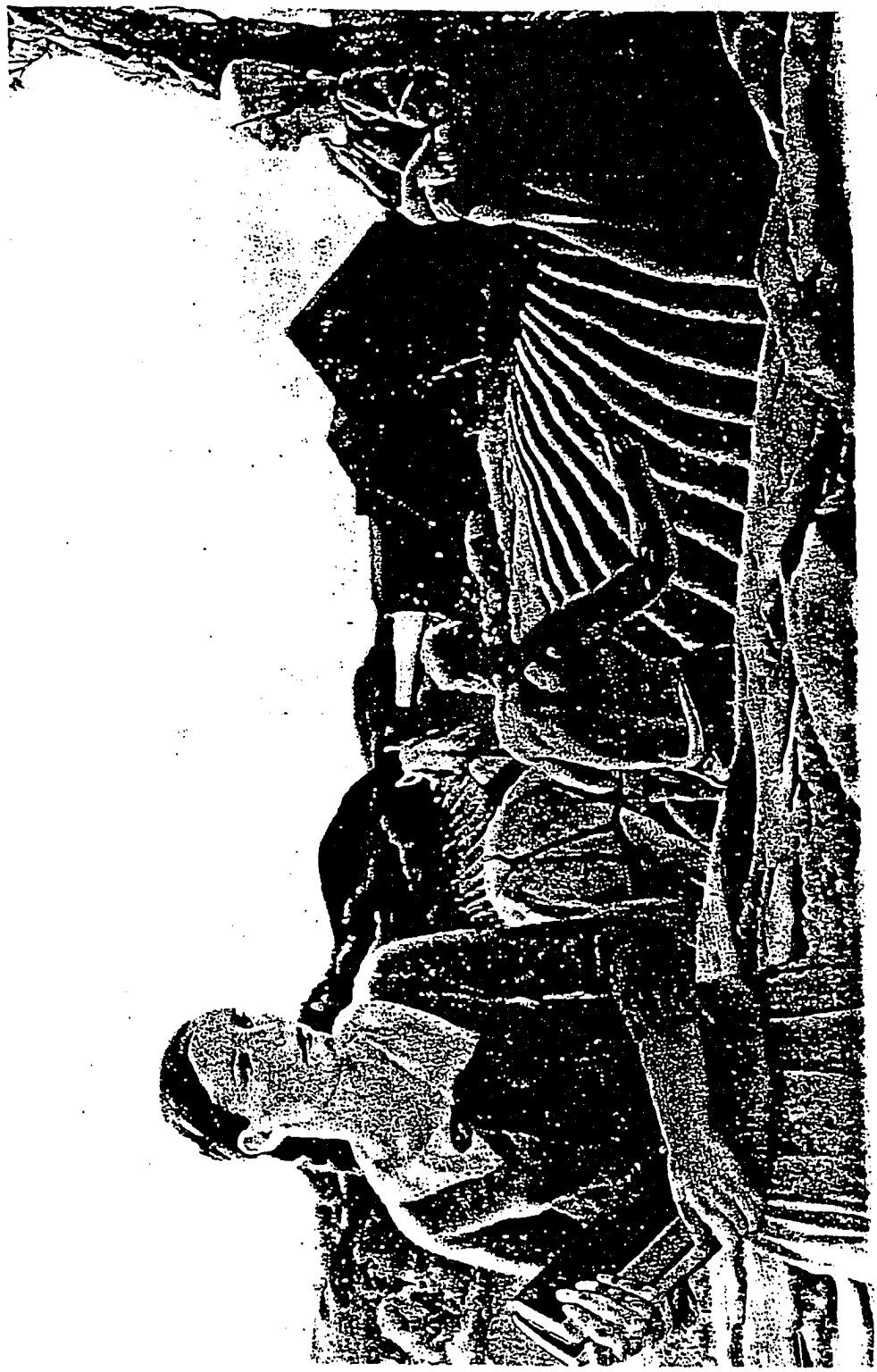
Please remember that these questions are only *guides* for your thinking; you should not answer each specifically. That is, your story should be continuous and not just a set of answers to these questions.

There are no "right" or "wrong" stories. In fact, any kind of story is quite all right. You have a chance to show how quickly you can imagine and write a story on your own.

Try to make your stories interesting and dramatic. Show that you have an understanding of people and can make up stories about human situations. *Don't just describe the pictures, but write stories about them.*

Now, when asked to "*start*," turn the page, look at the picture briefly, and then on the reverse side of the page with the picture, write the story suggested to you by the picture. Don't take more than four minutes. You will be told when the four minutes are up, at which point you may turn to look at the second picture, look at it briefly (10 to 15 seconds), and continue the procedure, in each case creating and writing down a story on the reverse side of the page with the respective picture, until finished with the booklet.





APPENDICES VI, VII, AND VIII

COGNITIVE TESTS

1. The Picture Completetion subtest of the WAIS-R is explained in detail in Chapter 3, above, and will not be depicted here. Highest possible score is 20, lowest is 0.

2. The Witkin-Oltman Portable Rod and Frame Apparatus and test were explained in detail in Chapter 3, above. The highest score is 0. Scoring is done by counting the subject's deviations from the "true upright" or "vertical" expressed in degrees on eight runs. The eight scores are then added in the case of each subject. [Personal written communication to me from Dr. Philip Oltman of the Educational Testing Center in Princeton, confirmed that this is still the simplest and preferred way of assessing field independence/dependence or differentiation with use of this Apparatus].

3. Porteus Mazes. The three most complex of the Porteus Mazes (of Vineland Revision), depicted on the two pages following this one, were administered. The responses of the subject were scored on a "scoring grid" (p. 235, below) (that is, on both errors and time taken to complete).

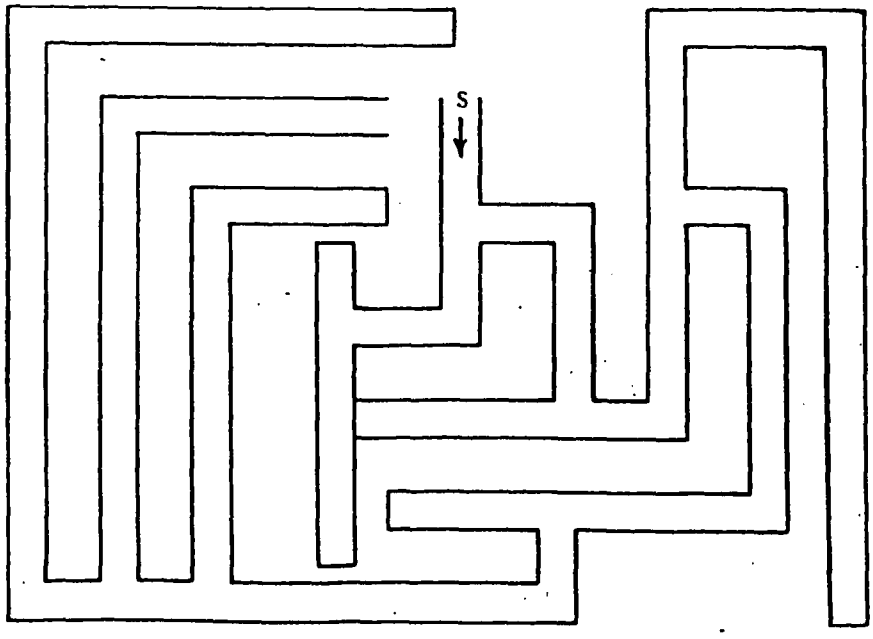
TIME: _____ KODE/CODE: _____

ONCE YOU HAVE FINISHED WITH THIS MAZE,

PLEASE TURN THE PAGE OVER AT ONCE,

AND CONTINUE ON THE REVERSE SIDE,

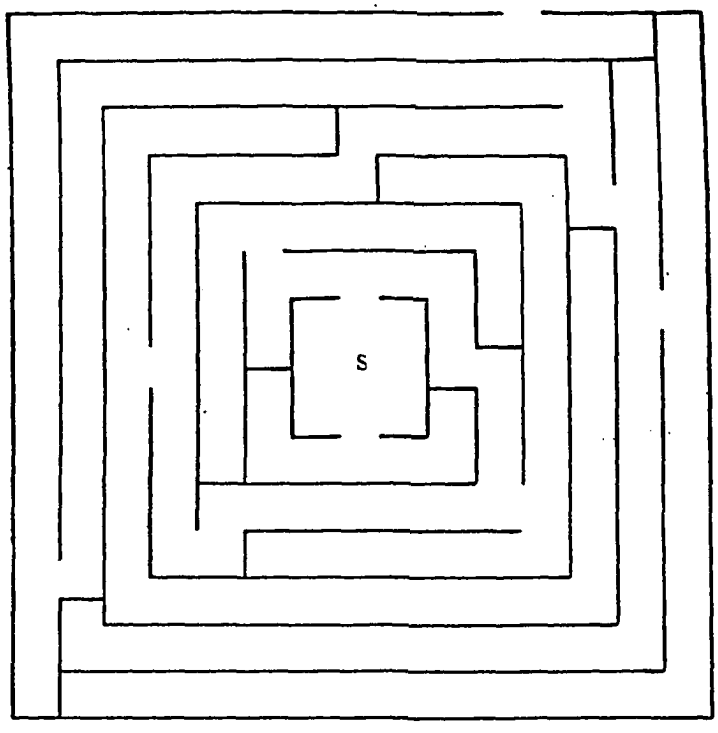
WITHOUT ANY INTERRUPTION

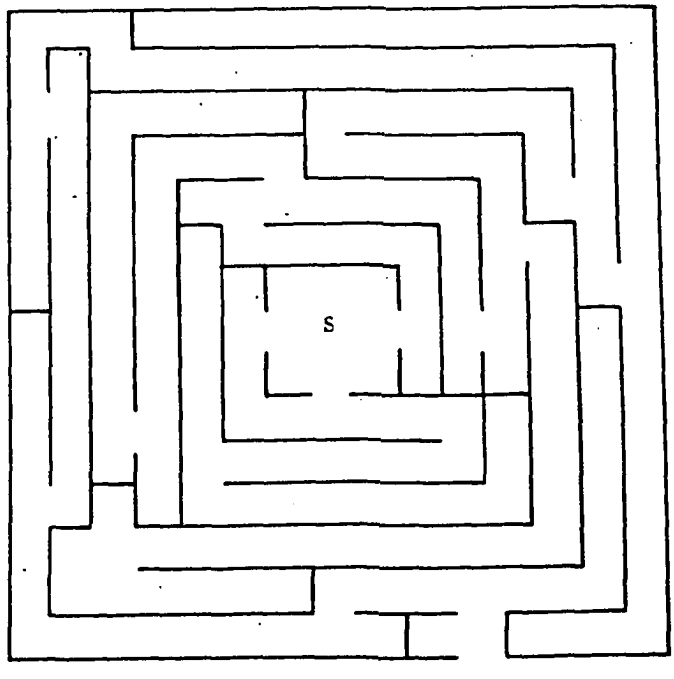


PORTEUS TESTS — VINELAND REVISION YEAR X

The Psychological Corporation
Harcourt Brace Jovanovich, Publishers

8-663189





PORTEUS MAZES

(the three most complex of Vineland Revision)

ERRORS X TIME COMPOSITE (WEIGHTED) SCORING GRID

	seconds to complete								
errors	40" or less	41" - 61"	62" - 81"	82" - 102"	103" - 122"	123" - 143"	144" - 164"	165" - 184"	185" or more
0	1000	938	875	812	750	687	625	562	500
1	900	844	788	731	675	618	562	506	450
2	800	750	700	650	600	550	500	450	400
3	700	657	612	568	525	481	438	393	350
4	600	563	525	487	450	412	375	337	300
5	500	469	438	406	375	344	312	281	250
6	400	375	350	325	300	275	250	225	200
7	300	281	262	244	225	206	188	169	150
8	200	188	175	162	150	137	125	112	100
9	100	94	88	81	75	69	62	56	50
10 or more	0	0	0	0	0	0	0	0	0

APPENDIX IX

INFORMATION SHEET AND QUESTIONNAIRE TO SUBSET OF PARENTS

Confidential code of the pupil/student (guaranteed to remain anonymous): _ _ _ _

To the parent(s) of a pupil/student who has just participated in a confidential survey

Your son or daughter has just participated in a confidential survey. In that survey we are attempting to compare the views, opinions, values, and motives of American and European youths of varying background and also of the young people of today with those of their parents and prior generations. (A similar survey was, for instance, conducted in the 1950s by a group headed by the late David C. McClelland, with some of the questions being identical to ones asked in our present survey.)

As young people are sometimes less informed about their own childhood than their parents are, we are asking you to kindly fill out the questionnaire on the reverse side of this sheet and to return it to us right away in the attached self-addressed, stamped envelope. We thank you in advance for your cooperation. ***In answering the questions please rely only upon your own memory. As we want to handle this very confidentially, and to keep you and your child's identity anonymous, we are requesting that you please do not identify yourself or your child by name or otherwise.***

THE FOLLOWING QUESTIONS ARE TO BE ANSWERED ONLY BY THE PARENT(S) AND *NOT* BY THE PUPIL/STUDENT.

DEMOGRAPHIC INFORMATION (confidential/anonymous)
ON YOUR *SON OR DAUGHTER* who participated in a confidential survey

HIS/HER SEX (M/F): ___ PLACE OF BIRTH (Town, State, Province, Country):_____ ____ ____

YEAR & MONTH OF BIRTH (but *not* exact date): _____ (Year) _____ (Month)

FOREIGN LANGUAGES (he/she learned in school or otherwise): _____

LANGUAGE(S) normally spoken at the pupil/student's home: _____

RELIGIOUS AFFILIATION *OF HIS/HER FATHER*: _____ *MOTHER*: _____

PROFESSION *OF HIS/HER FATHER*: _____ *MOTHER*: _____

WHO LIVED WITH YOUR CHILD WHEN HE/SHE WAS:

		1 year old?	2 years old?	5 years old?	10 years old?	15 years old?
	CHECK OFF APPLICABLE BOXES					
Natural (biological)	*Father*	☐	☐	☐	☐	☐
	Mother	☐	☐	☐	☐	☐
Step or foster	*Father*	☐	☐	☐	☐	☐
	Mother	☐	☐	☐	☐	☐
	PUT APPROPRIATE NUMBER INTO EACH BOX					
HOW MANY?	*Grandfather(s)*	☐	☐	☐	☐	☐
	Grandmother(s)	☐	☐	☐	☐	☐
HOW MANY?						
Full OLDER brother(s)		☐	☐	☐	☐	☐
Half, step, or foster OLDER brother(s)		☐	☐	☐	☐	☐
Full YOUNGER brother(s)		☐	☐	☐	☐	☐
Half, step, or foster YOUNGER brother(s)		☐	☐	☐	☐	☐
Full OLDER sister(s)		☐	☐	☐	☐	☐
Half, step, or foster OLDER sister(s)		☐	☐	☐	☐	☐
Full YOUNGER sister(s)		☐	☐	☐	☐	☐
Half, step, or foster YOUNGER *sister(s)*		☐	☐	☐	☐	☐
HOW MANY? *Other Relatives*		☐	☐	☐	☐	☐
Other Nonrelatives		☐	☐	☐	☐	☐

When your child was approximately 3, 4, 5 years old, did he/she sometimes have fairy tales (or other stories dealing with past times, such as myths, legends, sagas, ballads, etc.) told or read to him by a parent or grandparent? ☐ yes ☐ no If yes, then about how often during a year (twice, 5 times, 10 times, 100 times)? ____ Did he/she *read* (or on his/her own, attend a reading/telling of) any fairy tales (etc.) before reaching the age of 12 or 13? ☐ yes ☐ no If yes, then about how often during a year (twice, 5 times, 10 times, 100 times)? _____

When your child was 12, 13, 14 years old, did he/she sometimes not sleep at home, but in the house of a playmate, or did sometimes a playmate of your child spend the night at your home? How often (never, 2 or 3 times a year, more than 20 times a year, etc.)? _____

As well as you can recollect, when your child was 12, 13, 14 years old, did he/she *preferably* seek the advice of playmates/peers/children? ☐ *Or* of his/her parents or grandparents? ☐ *Or* of other adults? ☐ (On this question, please check off only one of the three boxes)

Please be so kind and fill out the "demographic information" sheet (below on this page) and the "questionnaire" (the following pages), giving us information on *YOURSELF*

DEMOGRAPHIC INFORMATION (confidential/anonymous) ON *YOURSELF* (parent of a pupil/student who participated in a confidential survey)

YOUR SEX (M/F): ___ PLACE OF BIRTH (Town, State, Province, Country):_____ ____ ____

YEAR & MONTH OF YOUR BIRTH (but *not* exact date): _____ (Year) _____ (Month)

FOREIGN LANGUAGES (learned in school or otherwise): _____ _____

LANGUAGE(S) normally spoken at YOUR PARENTS' home: _____

RELIGIOUS AFFILIATION *OF YOUR FATHER*: _____ *MOTHER*: _____

PROFESSION *OF YOUR FATHER*: _____ *MOTHER*: _____

WHO LIVED WITH YOU WHEN YOU WERE:

		1 year old?	*2 years old?*	*5 years old?*	*10 years old?*	*15 years old?*
	CHECK OFF APPLICABLE BOXES					
Natural (biological)	*Father*	☐	☐	☐	☐	☐
	Mother	☐	☐	☐	☐	☐
Step or foster	*Father*	☐	☐	☐	☐	☐
	Mother	☐	☐	☐	☐	☐
	PUT APPROPRIATE NUMBER INTO EACH BOX					
HOW MANY?	*Grandfather(s)*	☐	☐	☐	☐	☐
	Grandmother(s)	☐	☐	☐	☐	☐
HOW MANY?						
Full OLDER brother(s)		☐	☐	☐	☐	☐
Half, step, or foster OLDER brother(s)		☐	☐	☐	☐	☐
Full YOUNGER brother(s)		☐	☐	☐	☐	☐
Half, step, or foster YOUNGER brother(s)		☐	☐	☐	☐	☐
Full OLDER sister(s)		☐	☐	☐	☐	☐
Half, step, or foster OLDER sister(s)		☐	☐	☐	☐	☐
Full YOUNGER sister(s)		☐	☐	☐	☐	☐
Half, step, or foster YOUNGER *sister(s)*		☐	☐	☐	☐	☐
HOW MANY? *Other Relatives*		☐	☐	☐	☐	☐
Other Nonrelatives		☐	☐	☐	☐	☐

QUESTIONNAIRE (CONFIDENTIAL/ANONYMOUS) ON *YOUR OWN* VALUES, BELIEFS, OPINIONS ...

Here are some statements and questions that people have different opinions about. There are, in most cases, no "right" or "wrong" answers. Please read each item and decide *quickly* how you feel about it or what your view on the issue really is. Then fill in the appropriate answer. Please put down your first impression. **Kindly answer *all* questions, and only in the manner indicated. (Your answers shall only be read by a computer program. The computer can *only* read *correctly completed* questionnaires and the computer *cannot* read any comments or notes you add to the margins, etc.)**

Part A

For the following statements, please mark each one in the appropriate blank on the left, according to the amount of your agreement or disagreement, by using the indicated scale:

+3 = Strong support, agreement
+2 = Moderate support, agreement
+1 = Slight support, agreement
-1 = Slight opposition, disagreement
-2 = Moderate opposition, disagreement
-3 = Strong opposition, disagreement

☐ ☐ ☐ ☐ ☐ ☐ 1. No sane, normal, decent person would ever think of hurting the feelings of a good friend.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 2. Nowadays, with world conditions the way the are, the wise person lives for today and lets
+3 +2 +1 -1 -2 -3 tomorrow take care of itself.

☐ ☐ ☐ ☐ ☐ ☐ 3. It is better to go without something than to ask a favor.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 4. I set difficult goals for myself which I attempt to reach.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 5. There is no reason why husbands and wives should not have exactly the same duties and
+3 +2 +1 -1 -2 -3 chores, insofar as possible.

☐ ☐ ☐ ☐ ☐ ☐ 6. When I see someone working in an ordinary unskilled job, I often wonder why such a
+3 +2 +1 -1 -2 -3 person doesn't try to do better in life.

☐ ☐ ☐ ☐ ☐ ☐ 7. Planning only makes a person unhappy since your plans hardly ever work out anyway.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 8. We would have a lot less problems in our country, if it weren't that so many of the new
+3 +2 +1 -1 -2 -3 foreign immigrants are so uncivilized.

+3 = Strong support, agreement
+2 = Moderate support, agreement
+1 = Slight support, agreement
-1 = Slight opposition, disagreement
-2 = Moderate opposition, disagreement
-3 = Strong opposition, disagreement

☐ ☐ ☐ ☐ ☐ ☐ 9. There is no such thing as a really permanent, lifelong friendship. Your friends change .
+3 +2 +1 -1 -2 -3 with circumstances.

☐ ☐ ☐ ☐ ☐ ☐ 10. Homosexuals have equal rights. So they (*i.e.*, two people of the same sex) should be
+3 +2 +1 -1 -2 -3 allowed to marry one another.

☐ ☐ ☐ ☐ ☐ ☐ 11. If you get bad news it is better to hide what you feel and behave as if you didn't care.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 12. Equality has been stressed too much. We should focus more on the inequalities of status,
+3 +2 +1 -1 -2 -3 culture, character, capacity, age, titles, etc.

☐ ☐ ☐ ☐ ☐ ☐ 13. I work like a slave at everything I undertake until I am satisfied with the results.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 14. Taxes and medical costs are rising because those who work have to more and more
+3 +2 +1 -1 -2 -3 subsidize others who don't produce and earn enough.

☐ ☐ ☐ ☐ ☐ ☐ 15. There are some people, like great artists and musicians, who can be forgiven for not being
+3 +2 +1 -1 -2 -3 considerate of others, kind to the poor, etc.

☐ ☐ ☐ ☐ ☐ ☐ 16. People who are HIV+ (and thus have the potential for AIDS) should be barred from jobs
+3 +2 +1 -1 -2 -3 involving physical contact with members of the public.

☐ ☐ ☐ ☐ ☐ ☐ 17. There is hardly anything lower than a person who does not feel a great love, gratitude,
+3 +2 +1 -1 -2 -3 and respect for his parents.

☐ ☐ ☐ ☐ ☐ ☐ 18. Equal legal and political rights are not enough. Since people are of equal value they
+3 +2 +1 -1 -2 -3 should be esteemed and treated equally.

☐ ☐ ☐ ☐ ☐ ☐ 19. Some people take things too seriously: it's always better to forgive and forget, and to
+3 +2 +1 -1 -2 -3 let bygones be bygones.

☐ ☐ ☐ ☐ ☐ ☐ 20. It would irritate me very much to have a watch or clock which was off by several minutes
+3 +2 +1 -1 -2 -3 every day or so.

☐ ☐ ☐ ☐ ☐ ☐ 21. Sometimes I feel like crying, when something painful happens to someone in a book or
+3 +2 +1 -1 -2 -3 movie I have become involved in.

☐ ☐ ☐ ☐ ☐ ☐ 22. One should not tell people facts they don't want to hear: being tactful is more important
+3 +2 +1 -1 -2 -3 than being candid.

+3 = Strong support, agreement
+2 = Moderate support, agreement
+1 = Slight support, agreement
-1 = Slight opposition, disagreement
-2 = Moderate opposition, disagreement
-3 = Strong opposition, disagreement

☐ ☐ ☐ ☐ ☐ ☐ 23. I should like my children to visit the places in which my parents and grandparents grew
+3 +2 +1 -1 -2 -3 up.

☐ ☐ ☐ ☐ ☐ ☐ 24. When someone is born, the success such person is going to have is already in the cards,
+3 +2 +1 -1 -2 -3 so one might as well accept it and not fight against it.

☐ ☐ ☐ ☐ ☐ ☐ 25. Vicious criminals (who have murdered or hurt people) should be hung from lampposts
+3 +2 +1 -1 -2 -3 in their own neighborhoods.

☐ ☐ ☐ ☐ ☐ ☐ 26. One should be friendly and familiar with only a handful of people, and distant and formal
+3 +2 +1 -1 -2 -3 with most.

☐ ☐ ☐ ☐ ☐ ☐ 27. My political opinion is easily swayed by editorials I read.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 28. Great cultural figures are never ahead of their time: they *are* their time. It is the masses
+3 +2 +1 -1 -2 -3 who are behind their time.

☐ ☐ ☐ ☐ ☐ ☐ 29. When I have promised something which then turns out more risky and costly than foreseen,
+3 +2 +1 -1 -2 -3 I am certainly justified in breaking my promise.

☐ ☐ ☐ ☐ ☐ ☐ 30. Someone with money cannot really learn how to behave in polite society if such
+3 +2 +1 -1 -2 -3 person has not had the proper upbringing.

☐ ☐ ☐ ☐ ☐ ☐ 31. Ultimately it's more important to be rich and successful than to be highly educated and
+3 +2 +1 -1 -2 -3 cultured.

☐ ☐ ☐ ☐ ☐ ☐ 32. Respect is due an older man no matter what kind of a person he is.
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 33. One should always use simple language everyone can understand, even if this makes the
+3 +2 +1 -1 -2 -3 meaning a little less precise.

☐ ☐ ☐ ☐ ☐ ☐ 46. A child should never be asked to do anything, unless one also tells the reason for the request..
+3 +2 +1 -1 -2 -3

☐ ☐ ☐ ☐ ☐ ☐ 53. Good fortune will not bring satisfaction if one lacks the companion to share it with.
+3 +2 +1 -1 -2 -3

Part B

For each of the following statements, please check off *only the one box* (a, b, c, etc.) *which is most in agreement with your OWN views:*

34. When you go traveling, or on a picnic, or out to lunch or dinner, do you prefer to go
    - ☐ (a) by yourself;
    - ☐ (b) with one other person or with members of your family;
    - ☐ (c) with a group of (five or ten) friends;
    - ☐ (d) with a larger group (of perhaps 20 or 30), so that one gets to meet new people.

35. When you have been promised something by a certain time, and it's either not ready on time, or the quality leaves something to be desired, you
    - ☐ (a) get angry and never use such people again;
    - ☐ (b) make the best of it, since top quality is hard to get nowadays, and in the world of today it's difficult to find punctual people.

36. Within the past ten to fifteen years, as to your most intimate experiences (*e.g.*, sexual experiences, dreams, etc.), you
    - ☐ (a) are very open about them, and relate details freely, to, or in front of, just about anybody, since you are not a very secretive person;
    - ☐ (b) are only willing to share such details with your friends (at the most some five or ten people);
    - ☐ (c) are only willing to tell your very closest friends and confidants (*i.e.*, not more than one or two people in the world);
    - ☐ (d) regard such matters as completely private, and would not ever be willing to discuss them with anybody in the world.

37. When you speak to an adult you know fairly well (someone more or less your age or older) *about* your father or mother, or about one of their parents, do you sometimes use the terms "Mom," or "Dad" (or similar expressions of familiarity such as "Ma," or "Pa," or "Pop," or "Daddy," etc.)?
    ☐ (a) Yes ☐ (b) No

    Or do you *invariably only* use the terms "mother" and "father"?
    ☐ (a) Yes ☐ (b) No

    Or do you sometimes refer to your own, or someone else's, parents by first name or nickname?
    ☐ (a) Yes ☐ (b) No

38. Some people are brought up more realistically than others? Were you told or read fairy tales (or other stories dealing with past times, such as myths, legends, sagas, ballads, etc.) by a parents or grandparent, when you were about three, four, or five years old?
    ☐ (a) Yes ☐ (b) No If *yes*, about how often in a year (about twice, 5, 10, or 100 times)? _____

    Had you read, heard, or told quite a few fairy tales (myths, legends, etc.) by yourself, by the time you were 12 or 13?
    ☐ (c) Yes ☐ (d) No If *yes*, about how often in a year (about twice, 5, 10, or 100 times)? _____

    Or had you frequently *seen* (movies, films, videos) of fairy tales (myths, etc.) in the first 12 or 13 years of your life?
    ☐ (e) Yes ☐ (f) No If *yes*, about how often in a year (about twice, 5, 10, or 100 times)? _____

39. You call someone on the telephone at his home. A child answers. It is possibly the child of the man you are attempting to reach. In asking for the person to whom you wish to speak, would you say

☐ (a) "May I please speak to Mr. [last name]?" or

☐ (b) "May I please speak with [first name]?"or

☐ (c) "May I please speak to your father?" or

☐ (d) "May I please speak with your Dad [or 'daddy,' or similar term]?"

Part C

Please, making your answers as short and to the point as possible, respond to the following questions in the appropriate places:

40. What are the three things you would most like your children to learn in their lifetime?

_____

_____

_____

41. Please list here any *nonwork* activities (clubs, hobbies, sports, etc.) you are engaged in:

_____ _____

_____ _____

_____ _____

_____ _____

42. Assume that on your legal name is **William A. Humboldt/Elizabeth A. Humboldt.** At home everyone calls you Bill/Betty, except for your father who always called you William/Elizabeth. All your friends and relatives call you Bill/Betty (except for your best friend who calls you Willie/Lizzy). Of course, when you receive mail it is sometimes addressed to **Mr. William A. Humboldt/Mrs. (or Ms.) Elizabeth A. Humboldt**

(a) After you have asked a question in a public meeting, the person presiding asks you what your name is. Your answer would most likely be

_____ .

(b) You meet a stranger (about 15 to 30 years older than you) at a party. You would most likely introduce yourself as

_____ .

(c) A few minutes later you hear one person address that stranger as "Bob"; but a minute later someone else addresses him as "Dr. Muller." (He had introduced himself to you as "Robert Muller."). How would *you* now address him?

_____

(d) At the same party you meet a child. She asks you what your name is, and what she should call you. You answer:

_____

(e), Finally, at this party you meet a priest. He is Father James Flannigan. (You hear a friend of his call him "Jim.") . Father Flannigan addresses you as "Bill"/"Betty." How would you address the priest (after chatting with him for a while)?

_____

43. During the *past three years*, as regards friends or relatives you have *not seen in over five to six years*,
(a) Approximately how many letters have you written to such people? ("None," "Two or three," "50," etc.):

_____

(b) Approximately how many long distance telephone calls have you made to such people (during the past three years)? ("None," "Two or three," "50," etc.):

_____

(c) Approximately how many long distance telephone calls have your *received* from such people (during the past three years)? : ("None," "Two or three," "50," etc.):

_____

44. When you were about thirteen/fourteen years old, about how many times a year did you sleep over at a friend's place (instead of at home) or have a friend stay overnight at your home? (More than 20 times a year, only two or three times, never, etc.)

_____

45. When you were about thirteen/fourteen years old, not counting hours you were asleep or in classes at school, what percentage of your time did you typically spend

	Less than 5%	*10 to 20%*	*More than 30%*
(a) Watching television or movies?	☐	☐	☐
(b) At a computer?	☐	☐	☐
(c) Doing homework/studying?	☐	☐	☐
(d) Being at home*?	☐	☐	☐
(e) Being on the telephone?	☐	☐	☐
(f) Being with friends?	☐	☐	☐
(g) Reading?	☐	☐	☐

* If you were spending most of your time during those years in a boarding school or boarding institution, this question ("being at home?") refers to the time you typically spent in your home (house or apartment) during home visits.

51. Are any of the three friends with whom you spent most of your free time *10 to 15 years ago*, among the three people with whom you spend most of your free time *today*? How many (0, 1, 2, 3)? _____

54. If you are looking for advice about a very personal (intimate) problem, would you be more likely to go to someone (a) your own age? ☐ or (b) to an older person? ☐

55. Do you by and large feel yourself closer to the *culture* (customs, mores, and worldviews) of your parents and grandparents? ☐ Or to the (current) culture of people of your own age? ☐

56. Should parents be *primarily* models and educators of their children? ☐ *Or* their good friends and buddies? ☐

57. Do you believe a child will learn best from *older* teachers, who have more experience and can command more respect? ☐ *Or* from *younger ones*, where there is less distance between teachers and pupils/students? ☐

APPENDIX X

GLM/MANOVA

(corresponding to Table 4-42, in a sequel to Tables 4-40 and 4-41, p. 149, above, as discussed in connection with Hypothesis 4, on pp. 176 ff., above)

General Linear Model

GENERAL LINEAR MODEL/MANOVA COMPARING THE CHILDREN OF THE TWO GENERATIONS with comparison "thirds" based on "family-centredness" of i + 1 generation childhood

Between-Subjects Factors

		N
THIRDS pper, middle, and lower third of n = 132	-1.00	41
	.00	44
	1.00	44

Descriptive Statistics

	THIRDS pper, middle, and lower third of n = 132	Mean	Std. Deviation	N
FAC1_33 REGR factor score 1 for analysis 33	-1.00	-2.0843131E-02	.9117578	41
	.00	.1278789	1.1717102	44
	1.00	-.1084568	.8951821	44
	Total	-1.5099209E-17	1.0000000	129
FAC2_33 REGR factor score 2 for analysis 33	-1.00	-.2383701	1.4385456	41
	.00	.1825109	.7656137	44
	1.00	3.960665E-02	.6129247	44
	Total	1.492927E-17	1.0000000	129
FAC3_33 REGR factor score 3 for analysis 33	-1.00	-.6766392	1.0474016	41
	.00	1.608882E-02	.8781838	44
	1.00	.6144158	.6016054	44
	Total	-9.1795078E-17	1.0000000	129
FAC4_33 REGR factor score 4 for analysis 33	-1.00	.3386719	1.1010157	41
	.00	-.1750078	1.1254729	44
	1.00	-.1405729	.6492071	44
	Total	1.190244E-16	1.0000000	129

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Eta Squared
Intercept	Pillai's Trace	.001	.028	4.000	119.000	.998	.001
	Wilks' Lambda	.999	.028	4.000	119.000	.998	.001
	Hotelling's Trace	.001	.028	4.000	119.000	.998	.001
	Roy's Largest Root	.001	.028	4.000	119.000	.998	.001
FAC1_31	Pillai's Trace	.172	6.192	4.000	119.000	.000	.172
	Wilks' Lambda	.828	6.192	4.000	119.000	.000	.172
	Hotelling's Trace	.208	6.192	4.000	119.000	.000	.172
	Roy's Largest Root	.208	6.192	4.000	119.000	.000	.172
FAC2_31	Pillai's Trace	.001	.026	4.000	119.000	.999	.001
	Wilks' Lambda	.999	.026	4.000	119.000	.999	.001
	Hotelling's Trace	.001	.026	4.000	119.000	.999	.001
	Roy's	.001	.026	4.000	119.000	.999	.001

	Largest Root						
FAC3_31	Pillai's Trace	.218	8.282	4.000	119.000	.000	.218
	Wilks' Lambda	.782	8.282	4.000	119.000	.000	.218
	Hotelling's Trace	.278	8.282	4.000	119.000	.000	.218
	Roy's Largest Root	.278	8.282	4.000	119.000	.000	.218
FAC4_31	Pillai's Trace	.098	3.216	4.000	119.000	.015	.098
	Wilks' Lambda	.902	3.216	4.000	119.000	.015	.098
	Hotelling's Trace	.108	3.216	4.000	119.000	.015	.098
	Roy's Largest Root	.108	3.216	4.000	119.000	.015	.098
THIRDS	Pillai's Trace	.336	6.067	8.000	240.000	.000	.168
	Wilks' Lambda	.671	6.562	8.000	238.000	.000	.181
	Hotelling's Trace	.478	7.056	8.000	236.000	.000	.193
	Roy's Largest Root	.453	13.595	4.000	120.000	.000	.312

a Exact statistic
b The statistic is an upper bound on F that yields a lower bound on the significance level.
c Design: Intercept+FAC1_31+FAC2_31+FAC3_31+FAC4_31+THIRDS

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Corrected Model	FAC1_33 REGR factor score 1 for analysis 33	22.341	6	3.724	4.299	.001	.175
	FAC2_33 REGR factor score 2 for analysis 33	27.155	6	4.526	5.475	.000	.212
	FAC3_33 REGR factor score 3 for analysis 33	44.287	6	7.381	10.757	.000	.346
	FAC4_33 REGR factor score 4 for analysis 33	10.101	6	1.684	1.742	.117	.079
Intercept	FAC1_33 REGR factor score 1 for analysis 33	1.675E-02	1	1.675E-02	.019	.890	.000
	FAC2_33 REGR factor score 2 for analysis 33	1.829E-02	1	1.829E-02	.022	.882	.000
	FAC3_33 REGR factor score 3 for analysis 33	3.429E-02	1	3.429E-02	.050	.823	.000
	FAC4_33 REGR factor score 4 for analysis 33	3.318E-03	1	3.318E-03	.003	.953	.000
FAC1_31	FAC1_33 REGR factor score 1 for analysis 33	21.038	1	21.038	24.292	.000	.166
	FAC2_33 REGR factor score 2 for analysis 33	.236	1	.236	.285	.594	.002
	FAC3_33 REGR factor score 3 for analysis 33	.206	1	.206	.301	.584	.002
	FAC4_33 REGR factor score 4 for analysis 33	4.213E-02	1	4.213E-02	.044	.835	.000
FAC2_31	FAC1_33 REGR factor score 1 for analysis 33	1.975E-02	1	1.975E-02	.023	.880	.000
	FAC2_33 REGR factor score 2 for analysis 33	5.820E-02	1	5.820E-02	.070	.791	.001
	FAC3_33 REGR factor score 3 for analysis 33	4.776E-04	1	4.776E-04	.001	.979	.000
	FAC4_33 REGR factor score 4 for analysis 33	1.157E-02	1	1.157E-02	.012	.913	.000
FAC3_31	FAC1_33 REGR factor score 1 for analysis 33	2.498E-04	1	2.498E-04	.000	.986	.000

	FAC2_33 REGR factor score 2 for analysis 33	22.218	1	22.218	26.879	.000	.181
	FAC3_33 REGR factor score 3 for analysis 33	2.119	1	2.119	3.088	.081	.025
	FAC4_33 REGR factor score 4 for analysis 33	1.341	1	1.341	1.387	.241	.011
FAC4_31	FAC1_33 REGR factor score 1 for analysis 33	5.435E-03	1	5.435E-03	.006	.937	.000
	FAC2_33 REGR factor score 2 for analysis 33	.832	1	.832	1.006	.318	.008
	FAC3_33 REGR factor score 3 for analysis 33	6.450	1	6.450	9.399	.003	.072
	FAC4_33 REGR factor score 4 for analysis 33	1.829	1	1.829	1.892	.171	.015
THIRDS	FAC1_33 REGR factor score 1 for analysis 33	.399	2	.199	.230	.795	.004
	FAC2_33 REGR factor score 2 for analysis 33	.497	2	.248	.300	.741	.005
	FAC3_33 REGR factor score 3 for analysis 33	28.912	2	14.456	21.068	.000	.257
	FAC4_33 REGR factor score 4 for analysis 33	7.707	2	3.854	3.988	.021	.061
Error	FAC1_33 REGR factor score 1 for analysis 33	105.659	122	.866			
	FAC2_33 REGR factor score 2 for analysis 33	100.845	122	.827			
	FAC3_33 REGR factor score 3 for analysis 33	83.713	122	.686			
	FAC4_33 REGR factor score 4 for analysis 33	117.899	122	.966			
Total	FAC1_33 REGR factor score 1 for analysis 33	128.000	129				
	FAC2_33 REGR factor score 2 for analysis 33	128.000	129				
	FAC3_33 REGR factor score 3 for analysis 33	128.000	129				
	FAC4_33 REGR factor score 4 for analysis 33	128.000	129				
Corrected Total	FAC1_33 REGR factor score 1 for analysis 33	128.000	128				
	FAC2_33 REGR factor score 2 for analysis 33	128.000	128				
	FAC3_33 REGR factor score 3 for analysis 33	128.000	128				
	FAC4_33 REGR factor score 4 for analysis 33	128.000	128				

a R Squared = .175 (Adjusted R Squared = .134)
b R Squared = .212 (Adjusted R Squared = .173)
c R Squared = .346 (Adjusted R Squared = .314)
d R Squared = .079 (Adjusted R Squared = .034)

GENERAL LINEAR MODEL/MANOVA COMPARING THE ADULTS OF THE TWO GENERATIONS with comparison "thirds" based on "family-centredness" of $i + 1$ generation childhood

Between-Subjects Factors

		N
THIRDS pper, middle, and lower third of n = 132	-1.00	44
	.00	44
	1.00	44

Descriptive Statistics

	THIRDS pper, middle, and lower third of $n = 132$	Mean	Std. Deviation	N
FAC1_38 REGR factor score 1 for analysis 38	-1.00	.3477310	1.1364249	44
	.00	-.1048069	.8410408	44
	1.00	-.2429241	.9232265	44
	Total	-8.5961986E-17	1.0000000	132
FAC2_38 REGR factor score 2 for analysis 38	-1.00	-.2270738	1.1947108	44
	.00	-8.0917862E-02	.9157156	44
	1.00	.3079916	.7900102	44
	Total	1.374485E-16	1.0000000	132
FAC3_38 REGR factor score 3 for analysis 38	-1.00	-.1177697	1.1865576	44
	.00	2.697954E-02	.9538542	44
	1.00	9.079014E-02	.8398709	44
	Total	-2.6520602E-17	1.0000000	132
FAC4_38 REGR factor score 4 for analysis 38	-1.00	4.281635E-02	1.2796602	44
	.00	3.676541E-02	.8572450	44
	1.00	-7.9581760E-02	.8150907	44
	Total	-7.4822139E-17	1.0000000	132
FAC5_38 REGR factor score 5 for analysis 38	-1.00	.2380246	1.2384596	44
	.00	-.1848234	.8038802	44
	1.00	-5.3201165E-02	.8778852	44
	Total	-4.2207821E-16	1.0000000	132
FAC6_38 REGR factor score 6 for analysis 38	-1.00	-6.4859423E-02	1.0670944	44
	.00	-6.8827367E-03	.9795419	44
	1.00	7.174216E-02	.9688649	44
	Total	6.952277E-17	1.0000000	132
FAC7_38 REGR factor score 7 for analysis 38	-1.00	9.259602E-02	1.2041404	44
	.00	-6.3927677E-02	.8181625	44
	1.00	-2.8668344E-02	.9557047	44
	Total	3.606234E-16	1.0000000	132
FAC8_38 REGR factor score 8 for analysis 38	-1.00	-.1014289	.9837529	44
	.00	.1800039	1.1147270	44
	1.00	-7.8574981E-02	.8866373	44
	Total	3.518177E-16	1.0000000	132
FAC9_38 REGR factor score 9 for analysis 38	-1.00	5.103577E-02	1.2082570	44
	.00	8.214512E-03	.9614368	44

				44
	1.00	-5.9250279E-02	.8099009	44
	Total	2.732083E-16	1.0000000	132
FAC10_38 REGR factor score 10 for analysis 38	-1.00	-4.2965123E-02	.9280507	44
	.00	3.510375E-02	.9415214	44
	1.00	7.861376E-03	1.1382258	44
	Total	1.634524E-16	1.0000000	132
FAC11_38 REGR factor score 11 for analysis 38	-1.00	-8.0707327E-02	1.0409977	44
	.00	1.648440E-02	1.1036415	44
	1.00	6.422292E-02	.8565321	44
	Total	-9.7132910E-16	1.0000000	132
FAC12_38 REGR factor score 12 for analysis 38	-1.00	.3148473	.9628971	44
	.00	1.992177E-02	1.0491872	44
	1.00	-.3347691	.8955614	44
	Total	-2.8543062E-16	1.0000000	132

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Eta Squared
Intercept	Pillai's Trace	.000	.000	12.000	107.000	1.000	.000
	Wilks' Lambda	1.000	.000	12.000	107.000	1.000	.000
	Hotelling's Trace	.000	.000	12.000	107.000	1.000	.000
	Roy's Largest Root	.000	.000	12.000	107.000	1.000	.000
FAC1_36	Pillai's Trace	.332	4.426	12.000	107.000	.000	.332
	Wilks' Lambda	.668	4.426	12.000	107.000	.000	.332
	Hotelling's Trace	.496	4.426	12.000	107.000	.000	.332
	Roy's Largest Root	.496	4.426	12.000	107.000	.000	.332
FAC2_36	Pillai's Trace	.366	5.148	12.000	107.000	.000	.366
	Wilks' Lambda	.634	5.148	12.000	107.000	.000	.366
	Hotelling's Trace	.577	5.148	12.000	107.000	.000	.366
	Roy's Largest Root	.577	5.148	12.000	107.000	.000	.366
FAC3_36	Pillai's Trace	.221	2.531	12.000	107.000	.006	.221
	Wilks' Lambda	.779	2.531	12.000	107.000	.006	.221
	Hotelling's Trace	.284	2.531	12.000	107.000	.006	.221
	Roy's Largest Root	.284	2.531	12.000	107.000	.006	.221
FAC4_36	Pillai's Trace	.272	3.326	12.000	107.000	.000	.272
	Wilks' Lambda	.728	3.326	12.000	107.000	.000	.272
	Hotelling's Trace	.373	3.326	12.000	107.000	.000	.272
	Roy's Largest Root	.373	3.326	12.000	107.000	.000	.272
FAC5_36	Pillai's Trace	.229	2.646	12.000	107.000	.004	.229
	Wilks' Lambda	.771	2.646	12.000	107.000	.004	.229
	Hotelling's	.297	2.646	12.000	107.000	.004	.229

	Trace						
	Roy's Largest Root	.297	2.646	12.000	107.000	.004	.229
FAC6_36	Pillai's Trace	.136	1.398	12.000	107.000	.178	.136
	Wilks' Lambda	.864	1.398	12.000	107.000	.178	.136
	Hotelling's Trace	.157	1.398	12.000	107.000	.178	.136
	Roy's Largest Root	.157	1.398	12.000	107.000	.178	.136
FAC7_36	Pillai's Trace	.164	1.744	12.000	107.000	.067	.164
	Wilks' Lambda	.836	1.744	12.000	107.000	.067	.164
	Hotelling's Trace	.196	1.744	12.000	107.000	.067	.164
	Roy's Largest Root	.196	1.744	12.000	107.000	.067	.164
FAC8_36	Pillai's Trace	.073	.703	12.000	107.000	.745	.073
	Wilks' Lambda	.927	.703	12.000	107.000	.745	.073
	Hotelling's Trace	.079	.703	12.000	107.000	.745	.073
	Roy's Largest Root	.079	.703	12.000	107.000	.745	.073
FAC9_36	Pillai's Trace	.205	2.293	12.000	107.000	.012	.205
	Wilks' Lambda	.795	2.293	12.000	107.000	.012	.205
	Hotelling's Trace	.257	2.293	12.000	107.000	.012	.205
	Roy's Largest Root	.257	2.293	12.000	107.000	.012	.205
FAC10_36	Pillai's Trace	.130	1.336	12.000	107.000	.209	.130
	Wilks' Lambda	.870	1.336	12.000	107.000	.209	.130
	Hotelling's Trace	.150	1.336	12.000	107.000	.209	.130
	Roy's Largest Root	.150	1.336	12.000	107.000	.209	.130
FAC11_36	Pillai's Trace	.242	2.852	12.000	107.000	.002	.242
	Wilks' Lambda	.758	2.852	12.000	107.000	.002	.242
	Hotelling's Trace	.320	2.852	12.000	107.000	.002	.242
	Roy's Largest Root	.320	2.852	12.000	107.000	.002	.242
THIRDS	Pillai's Trace	.266	1.378	24.000	216.000	.119	.133
	Wilks' Lambda	.746	1.405	24.000	214.000	.107	.136
	Hotelling's Trace	.324	1.431	24.000	212.000	.095	.139
	Roy's Largest Root	.263	2.368	12.000	108.000	.010	.208

a Exact statistic

b The statistic is an upper bound on F that yields a lower bound on the significance level.

c Design:
Intercept+FAC1_36+FAC2_36+FAC3_36+FAC4_36+FAC5_36+FAC6_36+FAC7_36+FAC8_36+FAC9_36+FAC10_36+FAC11_36+THIRDS

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Corrected Model	FAC1_38 REGR factor score 1 for analysis 38	46.248	13	3.558	4.953	.000	.353
	FAC2_38 REGR factor score 2 for analysis 38	21.217	13	1.632	1.754	.059	.162
	FAC3_38 REGR factor score 3 for analysis 38	24.714	13	1.901	2.111	.018	.189
	FAC4_38 REGR factor score 4 for analysis 38	33.308	13	2.562	3.095	.001	.254
	FAC5_38 REGR factor score 5 for analysis 38	28.176	13	2.167	2.487	.005	.215
	FAC6_38 REGR factor score 6 for analysis 38	21.131	13	1.625	1.746	.060	.161
	FAC7_38 REGR factor score 7 for analysis 38	11.399	13	.877	.865	.591	.087
	FAC8_38 REGR factor score 8 for analysis 38	24.909	13	1.916	2.131	.017	.190
	FAC9_38 REGR factor score 9 for analysis 38	24.628	13	1.894	2.102	.019	.188
	FAC10_38 REGR factor score 10 for analysis 38	11.761	13	.905	.895	.560	.090
	FAC11_38 REGR factor score 11 for analysis 38	3.191	13	.245	.227	.998	.024
	FAC12_38 REGR factor score 12 for analysis 38	17.457	13	1.343	1.396	.171	.133
Intercept	FAC1_38 REGR factor score 1 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC2_38 REGR factor score 2 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC3_38 REGR factor score 3 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC4_38 REGR factor score 4 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC5_38 REGR factor score 5 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC6_38 REGR factor score 6 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC7_38 REGR factor score 7 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC8_38 REGR factor score 8 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC9_38 REGR factor score 9 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC10_38 REGR factor score 10 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC11_38 REGR factor score 11 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC12_38 REGR factor score 12 for analysis 38	.000	1	.000	.000	1.000	.000
FAC1_36	FAC1_38 REGR factor score 1 for analysis 38	21.425	1	21.425	29.830	.000	.202
	FAC2_38 REGR factor score 2 for analysis 38	.152	1	.152	.163	.687	.001
	FAC3_38 REGR factor score 3 for analysis 38	3.383	1	3.383	3.755	.055	.031
	FAC4_38 REGR factor score 4 for analysis 38	2.962	1	2.962	3.578	.061	.029
	FAC5_38 REGR factor score 5 for analysis 38	.210	1	.210	.241	.625	.002

	FAC6_38 REGR factor score 6 for analysis 38	.398	1	.398	.428	.514	.004
	FAC7_38 REGR factor score 7 for analysis 38	8.626E-02	1	8.626E-02	.085	.771	.001
	FAC8_38 REGR factor score 8 for analysis 38	1.963E-04	1	1.963E-04	.000	.988	.000
	FAC9_38 REGR factor score 9 for analysis 38	2.089	1	2.089	2.318	.131	.019
	FAC10_38 REGR factor score 10 for analysis 38	.357	1	.357	.353	.554	.003
	FAC11_38 REGR factor score 11 for analysis 38	.541	1	.541	.500	.481	.004
	FAC12_38 REGR factor score 12 for analysis 38	.170	1	.170	.177	.675	.001
FAC2_36	FAC1_38 REGR factor score 1 for analysis 38	.289	1	.289	.403	.527	.003
	FAC2_38 REGR factor score 2 for analysis 38	.496	1	.496	.533	.467	.004
	FAC3_38 REGR factor score 3 for analysis 38	5.720	1	5.720	6.351	.013	.051
	FAC4_38 REGR factor score 4 for analysis 38	12.169	1	12.169	14.699	.000	.111
	FAC5_38 REGR factor score 5 for analysis 38	14.701	1	14.701	16.870	.000	.125
	FAC6_38 REGR factor score 6 for analysis 38	6.858E-02	1	6.858E-02	.074	.787	.001
	FAC7_38 REGR factor score 7 for analysis 38	2.457	1	2.457	2.424	.122	.020
	FAC8_38 REGR factor score 8 for analysis 38	.419	1	.419	.466	.496	.004
	FAC9_38 REGR factor score 9 for analysis 38	.267	1	.267	.296	.588	.003
	FAC10_38 REGR factor score 10 for analysis 38	2.743	1	2.743	2.714	.102	.022
	FAC11_38 REGR factor score 11 for analysis 38	.121	1	.121	.112	.738	.001
	FAC12_38 REGR factor score 12 for analysis 38	1.566	1	1.566	1.628	.205	.014
FAC3_36	FAC1_38 REGR factor score 1 for analysis 38	.199	1	.199	.277	.600	.002
	FAC2_38 REGR factor score 2 for analysis 38	3.079E-02	1	3.079E-02	.033	.856	.000
	FAC3_38 REGR factor score 3 for analysis 38	2.420	1	2.420	2.687	.104	.022
	FAC4_38 REGR factor score 4 for analysis 38	1.238	1	1.238	1.495	.224	.013
	FAC5_38 REGR factor score 5 for analysis 38	4.326	1	4.326	4.964	.028	.040
	FAC6_38 REGR factor score 6 for analysis 38	10.543	1	10.543	11.323	.001	.088
	FAC7_38 REGR factor score 7 for analysis 38	.992	1	.992	.979	.324	.008
	FAC8_38 REGR factor score 8 for analysis 38	1.143	1	1.143	1.271	.262	.011
	FAC9_38 REGR factor score 9 for analysis 38	1.421	1	1.421	1.576	.212	.013
	FAC10_38 REGR factor score 10 for analysis 38	.201	1	.201	.199	.656	.002
	FAC11_38 REGR factor score 11 for analysis 38	6.724E-04	1	6.724E-04	.001	.980	.000
	FAC12_38 REGR factor score 12 for analysis 38	.215	1	.215	.224	.637	.002

							02
FAC4_36	FAC1_38 REGR factor score 1 for analysis 38	6.074	1	6.074	8.456	.004	.067
	FAC2_38 REGR factor score 2 for analysis 38	1.241E-02	1	1.241E-02	.013	.908	.000
	FAC3_38 REGR factor score 3 for analysis 38	.897	1	.897	.996	.320	.008
	FAC4_38 REGR factor score 4 for analysis 38	.629	1	.629	.760	.385	.006
	FAC5_38 REGR factor score 5 for analysis 38	2.807	1	2.807	3.221	.075	.027
	FAC6_38 REGR factor score 6 for analysis 38	.608	1	.608	.653	.421	.005
	FAC7_38 REGR factor score 7 for analysis 38	4.649	1	4.649	4.587	.034	.037
	FAC8_38 REGR factor score 8 for analysis 38	8.360	1	8.360	9.299	.003	.073
	FAC9_38 REGR factor score 9 for analysis 38	.307	1	.307	.340	.561	.003
	FAC10_38 REGR factor score 10 for analysis 38	.649	1	.649	.642	.425	.005
	FAC11_38 REGR factor score 11 for analysis 38	.814	1	.814	.751	.388	.006
	FAC12_38 REGR factor score 12 for analysis 38	.664	1	.664	.690	.408	.006
FAC5_36	FAC1_38 REGR factor score 1 for analysis 38	.785	1	.785	1.093	.298	.009
	FAC2_38 REGR factor score 2 for analysis 38	.177	1	.177	.190	.664	.002
	FAC3_38 REGR factor score 3 for analysis 38	5.095	1	5.095	5.656	.019	.046
	FAC4_38 REGR factor score 4 for analysis 38	6.628	1	6.628	8.005	.005	.064
	FAC5_38 REGR factor score 5 for analysis 38	.716	1	.716	.822	.366	.007
	FAC6_38 REGR factor score 6 for analysis 38	1.196	1	1.196	1.284	.259	.011
	FAC7_38 REGR factor score 7 for analysis 38	.995	1	.995	.982	.324	.008
	FAC8_38 REGR factor score 8 for analysis 38	.510	1	.510	.567	.453	.005
	FAC9_38 REGR factor score 9 for analysis 38	4.795	1	4.795	5.319	.023	.043
	FAC10_38 REGR factor score 10 for analysis 38	2.680	1	2.680	2.652	.106	.022
	FAC11_38 REGR factor score 11 for analysis 38	3.366E-03	1	3.366E-03	.003	.956	.000
	FAC12_38 REGR factor score 12 for analysis 38	5.553E-02	1	5.553E-02	.058	.811	.000
FAC6_36	FAC1_38 REGR factor score 1 for analysis 38	3.625E-02	1	3.625E-02	.050	.823	.000
	FAC2_38 REGR factor score 2 for analysis 38	.524	1	.524	.564	.454	.005
	FAC3_38 REGR factor score 3 for analysis 38	5.633	1	5.633	6.254	.014	.050
	FAC4_38 REGR factor score 4 for analysis 38	3.434	1	3.434	4.148	.044	.034
	FAC5_38 REGR factor score 5 for analysis 38	.239	1	.239	.274	.602	.002
	FAC6_38 REGR factor score 6 for analysis 38	2.346	1	2.346	2.520	.115	.021
	FAC7_38 REGR factor	6.018E-02	1	6.018E-02	.059	.808	.001

	score 7 for analysis 38						
	FAC8_38 REGR factor score 8 for analysis 38	1.179	1	1.179	1.311	.255	.011
	FAC9_38 REGR factor score 9 for analysis 38	3.254E-02	1	3.254E-02	.036	.850	.000
	FAC10_38 REGR factor score 10 for analysis 38	3.630E-02	1	3.630E-02	.036	.850	.000
	FAC11_38 REGR factor score 11 for analysis 38	.183	1	.183	.169	.681	.001
	FAC12_38 REGR factor score 12 for analysis 38	.185	1	.185	.192	.662	.002
FAC7_36	FAC1_38 REGR factor score 1 for analysis 38	1.937	1	1.937	2.697	.103	.022
	FAC2_38 REGR factor score 2 for analysis 38	.739	1	.739	.794	.375	.007
	FAC3_38 REGR factor score 3 for analysis 38	.303	1	.303	.336	.563	.003
	FAC4_38 REGR factor score 4 for analysis 38	.296	1	.296	.358	.551	.003
	FAC5_38 REGR factor score 5 for analysis 38	.101	1	.101	.115	.735	.001
	FAC6_38 REGR factor score 6 for analysis 38	2.199	1	2.199	2.362	.127	.020
	FAC7_38 REGR factor score 7 for analysis 38	.131	1	.131	.129	.720	.001
	FAC8_38 REGR factor score 8 for analysis 38	6.104	1	6.104	6.789	.010	.054
	FAC9_38 REGR factor score 9 for analysis 38	.522	1	.522	.579	.448	.005
	FAC10_38 REGR factor score 10 for analysis 38	2.077E-02	1	2.077E-02	.021	.886	.000
	FAC11_38 REGR factor score 11 for analysis 38	1.329E-03	1	1.329E-03	.001	.972	.000
	FAC12_38 REGR factor score 12 for analysis 38	2.601	1	2.601	2.704	.103	.022
FAC8_36	FAC1_38 REGR factor score 1 for analysis 38	1.680	1	1.680	2.339	.129	.019
	FAC2_38 REGR factor score 2 for analysis 38	2.658	1	2.658	2.857	.094	.024
	FAC3_38 REGR factor score 3 for analysis 38	.381	1	.381	.423	.517	.004
	FAC4_38 REGR factor score 4 for analysis 38	1.042E-02	1	1.042E-02	.013	.911	.000
	FAC5_38 REGR factor score 5 for analysis 38	1.674E-02	1	1.674E-02	.019	.890	.000
	FAC6_38 REGR factor score 6 for analysis 38	.137	1	.137	.147	.702	.001
	FAC7_38 REGR factor score 7 for analysis 38	.103	1	.103	.102	.750	.001
	FAC8_38 REGR factor score 8 for analysis 38	7.146E-02	1	7.146E-02	.079	.778	.001
	FAC9_38 REGR factor score 9 for analysis 38	2.116E-02	1	2.116E-02	.023	.878	.000
	FAC10_38 REGR factor score 10 for analysis 38	.649	1	.649	.642	.424	.005
	FAC11_38 REGR factor score 11 for analysis 38	.387	1	.387	.357	.551	.003
	FAC12_38 REGR factor score 12 for analysis 38	1.851E-02	1	1.851E-02	.019	.890	.000
FAC9_36	FAC1_38 REGR factor score 1 for analysis 38	2.994	1	2.994	4.168	.043	.034
	FAC2_38 REGR factor	2.631E-03	1	2.631E-03	.003	.958	.000

	score 2 for analysis 38						
	FAC3_38 REGR factor score 3 for analysis 38	2.432E-03	1	2.432E-03	.003	.959	.000
	FAC4_38 REGR factor score 4 for analysis 38	1.313	1	1.313	1.586	.210	.013
	FAC5_38 REGR factor score 5 for analysis 38	.610	1	.610	.700	.405	.006
	FAC6_38 REGR factor score 6 for analysis 38	1.690	1	1.690	1.815	.180	.015
	FAC7_38 REGR factor score 7 for analysis 38	.648	1	.648	.639	.426	.005
	FAC8_38 REGR factor score 8 for analysis 38	2.795	1	2.795	3.108	.080	.026
	FAC9_38 REGR factor score 9 for analysis 38	5.052	1	5.052	5.604	.020	.045
	FAC10_38 REGR factor score 10 for analysis 38	1.368	1	1.368	1.354	.247	.011
	FAC11_38 REGR factor score 11 for analysis 38	5.944E-03	1	5.944E-03	.005	.941	.000
	FAC12_38 REGR factor score 12 for analysis 38	2.349	1	2.349	2.441	.121	.020
FAC10_36	FAC1_38 REGR factor score 1 for analysis 38	1.114	1	1.114	1.552	.215	.013
	FAC2_38 REGR factor score 2 for analysis 38	.948	1	.948	1.019	.315	.009
	FAC3_38 REGR factor score 3 for analysis 38	7.949E-02	1	7.949E-02	.088	.767	.001
	FAC4_38 REGR factor score 4 for analysis 38	2.753	1	2.753	3.325	.071	.027
	FAC5_38 REGR factor score 5 for analysis 38	2.107E-02	1	2.107E-02	.024	.877	.000
	FAC6_38 REGR factor score 6 for analysis 38	1.254	1	1.254	1.347	.248	.011
	FAC7_38 REGR factor score 7 for analysis 38	.247	1	.247	.244	.622	.002
	FAC8_38 REGR factor score 8 for analysis 38	1.768	1	1.768	1.967	.163	.016
	FAC9_38 REGR factor score 9 for analysis 38	.599	1	.599	.665	.416	.006
	FAC10_38 REGR factor score 10 for analysis 38	6.275E-02	1	6.275E-02	.062	.804	.001
	FAC11_38 REGR factor score 11 for analysis 38	.447	1	.447	.413	.522	.003
	FAC12_38 REGR factor score 12 for analysis 38	.297	1	.297	.309	.580	.003
FAC11_36	FAC1_38 REGR factor score 1 for analysis 38	1.239	1	1.239	1.725	.192	.014
	FAC2_38 REGR factor score 2 for analysis 38	8.552	1	8.552	9.192	.003	.072
	FAC3_38 REGR factor score 3 for analysis 38	5.363E-02	1	5.363E-02	.060	.808	.001
	FAC4_38 REGR factor score 4 for analysis 38	1.012	1	1.012	1.222	.271	.010
	FAC5_38 REGR factor score 5 for analysis 38	.446	1	.446	.512	.476	.004
	FAC6_38 REGR factor score 6 for analysis 38	.439	1	.439	.472	.493	.004
	FAC7_38 REGR factor score 7 for analysis 38	.579	1	.579	.572	.451	.005
	FAC8_38 REGR factor score 8 for analysis 38	.241	1	.241	.268	.606	.002
	FAC9_38 REGR factor	10.063	1	10.063	11.163	.001	.086

	score 9 for analysis 38					
	FAC10_38 REGR factor score 10 for analysis 38	2.629	1	2.629	2.601	.109	.022
	FAC11_38 REGR factor score 11 for analysis 38	.222	1	.222	.205	.651	.002
	FAC12_38 REGR factor score 12 for analysis 38	.103	1	.103	.107	.744	.001
THIRDS	FAC1_38 REGR factor score 1 for analysis 38	6.633	2	3.317	4.618	.012	.073
	FAC2_38 REGR factor score 2 for analysis 38	4.037	2	2.018	2.170	.119	.035
	FAC3_38 REGR factor score 3 for analysis 38	.130	2	6.476E-02	.072	.931	.001
	FAC4_38 REGR factor score 4 for analysis 38	.245	2	.122	.148	.863	.002
	FAC5_38 REGR factor score 5 for analysis 38	1.571	2	.785	.901	.409	.015
	FAC6_38 REGR factor score 6 for analysis 38	1.028	2	.514	.552	.577	.009
	FAC7_38 REGR factor score 7 for analysis 38	.388	2	.194	.192	.826	.003
	FAC8_38 REGR factor score 8 for analysis 38	2.743	2	1.372	1.526	.222	.025
	FAC9_38 REGR factor score 9 for analysis 38	2.273	2	1.136	1.261	.287	.021
	FAC10_38 REGR factor score 10 for analysis 38	.207	2	.104	.103	.903	.002
	FAC11_38 REGR factor score 11 for analysis 38	.641	2	.320	.296	.744	.005
	FAC12_38 REGR factor score 12 for analysis 38	7.506	2	3.753	3.900	.023	.062
Error	FAC1_38 REGR factor score 1 for analysis 38	84.752	118	.718			
	FAC2_38 REGR factor score 2 for analysis 38	109.783	118	.930			
	FAC3_38 REGR factor score 3 for analysis 38	106.286	118	.901			
	FAC4_38 REGR factor score 4 for analysis 38	97.692	118	.828			
	FAC5_38 REGR factor score 5 for analysis 38	102.824	118	.871			
	FAC6_38 REGR factor score 6 for analysis 38	109.869	118	.931			
	FAC7_38 REGR factor score 7 for analysis 38	119.601	118	1.014			
	FAC8_38 REGR factor score 8 for analysis 38	106.091	118	.899			
	FAC9_38 REGR factor score 9 for analysis 38	106.372	118	.901			
	FAC10_38 REGR factor score 10 for analysis 38	119.239	118	1.011			
	FAC11_38 REGR factor score 11 for analysis 38	127.809	118	1.083			
	FAC12_38 REGR factor score 12 for analysis 38	113.543	118	.962			
Total	FAC1_38 REGR factor score 1 for analysis 38	131.000	132				
	FAC2_38 REGR factor score 2 for analysis 38	131.000	132				
	FAC3_38 REGR factor score 3 for analysis 38	131.000	132				
	FAC4_38 REGR factor	131.000	132				

	score 4 for analysis 38		
	FAC5_38 REGR factor score 5 for analysis 38	131.000	132
	FAC6_38 REGR factor score 6 for analysis 38	131.000	132
	FAC7_38 REGR factor score 7 for analysis 38	131.000	132
	FAC8_38 REGR factor score 8 for analysis 38	131.000	132
	FAC9_38 REGR factor score 9 for analysis 38	131.000	132
	FAC10_38 REGR factor score 10 for analysis 38	131.000	132
	FAC11_38 REGR factor score 11 for analysis 38	131.000	132
	FAC12_38 REGR factor score 12 for analysis 38	131.000	132
Corrected Total	FAC1_38 REGR factor score 1 for analysis 38	131.000	131
	FAC2_38 REGR factor score 2 for analysis 38	131.000	131
	FAC3_38 REGR factor score 3 for analysis 38	131.000	131
	FAC4_38 REGR factor score 4 for analysis 38	131.000	131
	FAC5_38 REGR factor score 5 for analysis 38	131.000	131
	FAC6_38 REGR factor score 6 for analysis 38	131.000	131
	FAC7_38 REGR factor score 7 for analysis 38	131.000	131
	FAC8_38 REGR factor score 8 for analysis 38	131.000	131
	FAC9_38 REGR factor score 9 for analysis 38	131.000	131
	FAC10_38 REGR factor score 10 for analysis 38	131.000	131
	FAC11_38 REGR factor score 11 for analysis 38	131.000	131
	FAC12_38 REGR factor score 12 for analysis 38	131.000	131

a R Squared = .353 (Adjusted R Squared = .282)
b R Squared = .162 (Adjusted R Squared = .070)
c R Squared = .189 (Adjusted R Squared = .099)
d R Squared = .254 (Adjusted R Squared = .172)
e R Squared = .215 (Adjusted R Squared = .129)
f R Squared = .161 (Adjusted R Squared = .069)
g R Squared = .087 (Adjusted R Squared = -.014)
h R Squared = .190 (Adjusted R Squared = .101)
i R Squared = .188 (Adjusted R Squared = .099)
j R Squared = .090 (Adjusted R Squared = -.011)
k R Squared = .024 (Adjusted R Squared = -.083)
l R Squared = .133 (Adjusted R Squared = .038)

GENERAL LINEAR MODEL/MANOVA COMPARING THE CHILDREN OF THE TWO GENERATIONS with comparison "ithirds" based on "family centredness" of *i* generation childhood)

Between-Subjects Factors

		N
ITHIRD	-1.00	43
	.00	42
	1.00	44

Descriptive Statistics

		ITHIRD	Mean	Std. Deviation	N
FAC1_33 REGR factor score	1 for analysis 33	-1.00	2.826439E-02	1.0381805	43
		.00	.1984748	1.2378655	42
		1.00	-.2170752	.6127460	44
		Total	-1.5099209E-17	1.0000000	129
FAC2_33 REGR factor score	2 for analysis 33	-1.00	8.880681E-03	.5978202	43
		.00	.1619041	.8602274	42
		1.00	-.1632236	1.3671686	44
		Total	1.492927E-17	1.0000000	129
FAC3_33 REGR factor score	3 for analysis 33	-1.00	2.116323E-02	.9477057	43
		.00	.2131493	.8857607	42
		1.00	-.2241429	1.1203448	44
		Total	-9.1795078E-17	1.0000000	129
FAC4_33 REGR factor score	4 for analysis 33	-1.00	2.422151E-02	.8452049	43
		.00	-.1079702	1.0501007	42
		1.00	7.939145E-02	1.0996094	44
		Total	1.190244E-16	1.0000000	129

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Eta Squared
Intercept	Pillai's Trace	.000	.014	4.000	119.000	1.000	.000
	Wilks' Lambda	1.000	.014	4.000	119.000	1.000	.000
	Hotelling's Trace	.000	.014	4.000	119.000	1.000	.000
	Roy's Largest Root	.000	.014	4.000	119.000	1.000	.000
FAC1_31	Pillai's Trace	.191	7.046	4.000	119.000	.000	.191
	Wilks' Lambda	.809	7.046	4.000	119.000	.000	.191
	Hotelling's Trace	.237	7.046	4.000	119.000	.000	.191
	Roy's Largest Root	.237	7.046	4.000	119.000	.000	.191
FAC2_31	Pillai's Trace	.014	.425	4.000	119.000	.790	.014
	Wilks' Lambda	.986	.425	4.000	119.000	.790	.014
	Hotelling's Trace	.014	.425	4.000	119.000	.790	.014
	Roy's Largest Root	.014	.425	4.000	119.000	.790	.014
FAC3_31	Pillai's Trace	.260	10.449	4.000	119.000	.000	.260
	Wilks' Lambda	.740	10.449	4.000	119.000	.000	.260
	Hotelling's	.351	10.449	4.000	119.000	.000	.260

	Trace						
	Roy's	.351	10.449	4.000	119.000	.000	.260
	Largest Root						
FAC4_31	Pillai's Trace	.066	2.116	4.000	119.000	.083	.066
	Wilks' Lambda	.934	2.116	4.000	119.000	.083	.066
	Hotelling's Trace	.071	2.116	4.000	119.000	.083	.066
	Roy's Largest Root	.071	2.116	4.000	119.000	.083	.066
ITHIRD	Pillai's Trace	.097	1.522	8.000	240.000	.150	.048
	Wilks' Lambda	.904	1.532	8.000	238.000	.147	.049
	Hotelling's Trace	.105	1.543	8.000	236.000	.143	.050
	Roy's Largest Root	.093	2.789	4.000	120.000	.029	.085

a Exact statistic
b The statistic is an upper bound on F that yields a lower bound on the significance level.
c Design: Intercept+FAC1_31+FAC2_31+FAC3_31+FAC4_31+ITHIRD

GENERAL LINEAR MODEL/MANOVA COMPARING THE ADULTS OF THE TWO GENERATIONS: based upon comparison "ithirds" based on "family centredness" of *i* generation childhood)

Between-Subjects Factors

		N
ITHIRD	-1.00	44
	.00	44
	1.00	44

Descriptive Statistics

			ITHIRD	Mean	Std. Deviation	N
FAC1_38	REGR factor score 1 for analysis	38	-1.00	.1512863	1.0241387	44
			.00	4.781377E-02	.9047813	44
			1.00	-.1991001	1.0548462	44
			Total	-8.5961986E-17	1.0000000	132
FAC2_38	REGR factor score 2 for analysis	38	-1.00	.1068934	1.2235837	44
			.00	-.1257701	.8701943	44
			1.00	1.887674E-02	.8739987	44
			Total	1.374485E-16	1.0000000	132
FAC3_38	REGR factor score 3 for analysis	38	-1.00	-4.7408742E-02	.8216087	44
			.00	6.079898E-02	1.1753891	44
			1.00	-1.3390237E-02	.9917991	44
			Total	-2.6520602E-17	1.0000000	132
FAC4_38	REGR factor score 4 for analysis	38	-1.00	-2.7361626E-02	.6798089	44
			.00	-.2518217	1.2568293	44
			1.00	.2791834	.9270063	44
			Total	-7.4822139E-17	1.0000000	132
FAC5_38	REGR factor score 5 for analysis	38	-1.00	-.2759286	.9163135	44
			.00	.2580538	1.1234606	44
			1.00	1.787484E-02	.8935004	44
			Total	-4.2207821E-16	1.0000000	132
FAC6_38	REGR factor score 6 for analysis	38	-1.00	.1470065	.8126713	44
			.00	3.319926E-02	1.0532992	44
			1.00	-.1802058	1.1046118	44

		Total	6.952277E-17	1.0000000	132
FAC7_38 REGR factor score 7 for analysis 38		-1.00	-.1761102	.9584082	44
		.00	.2526807	1.0343918	44
		1.00	-7.6570560E-02	.9772057	44
		Total	3.606234E-16	1.0000000	132
FAC8_38 REGR factor score 8 for analysis 38		-1.00	4.074021E-02	.9228752	44
		.00	-6.9590364E-02	1.1824101	44
		1.00	2.885015E-02	.8883771	44
		Total	3.518177E-16	1.0000000	132
FAC9_38 REGR factor score 9 for analysis 38		-1.00	8.102828E-03	1.0306887	44
		.00	.1805948	.9993573	44
		1.00	-.1886976	.9568712	44
		Total	2.732083E-16	1.0000000	132
FAC10_38 REGR factor score 10 for analysis 38		-1.00	-1.9379278E-02	.9313483	44
		.00	9.487781E-02	.9393652	44
		1.00	-7.5498527E-02	1.1319306	44
		Total	1.634524E-16	1.0000000	132
FAC11_38 REGR factor score 11 for analysis 38		-1.00	8.126287E-02	.8870433	44
		.00	-6.5105377E-02	.9751814	44
		1.00	-1.6157489E-02	1.1390019	44
		Total	-9.7132910E-16	1.0000000	132
FAC12_38 REGR factor score 12 for analysis 38		-1.00	9.081981E-02	.8230375	44
		.00	.1329077	1.0861552	44
		1.00	-.2237275	1.0543502	44
		Total	-2.8543062E-16	1.0000000	132

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Eta Squared
Intercept	Pillai's Trace	.000	.000	12.000	107.000	1.000	.000
	Wilks' Lambda	1.000	.000	12.000	107.000	1.000	.000
	Hotelling's Trace	.000	.000	12.000	107.000	1.000	.000
	Roy's Largest Root	.000	.000	12.000	107.000	1.000	.000
FAC1_36	Pillai's Trace	.280	3.468	12.000	107.000	.000	.280
	Wilks' Lambda	.720	3.468	12.000	107.000	.000	.280
	Hotelling's Trace	.389	3.468	12.000	107.000	.000	.280
	Roy's Largest Root	.389	3.468	12.000	107.000	.000	.280
FAC2_36	Pillai's Trace	.352	4.842	12.000	107.000	.000	.352
	Wilks' Lambda	.648	4.842	12.000	107.000	.000	.352
	Hotelling's Trace	.543	4.842	12.000	107.000	.000	.352
	Roy's Largest Root	.543	4.842	12.000	107.000	.000	.352
FAC3_36	Pillai's Trace	.214	2.431	12.000	107.000	.008	.214
	Wilks' Lambda	.786	2.431	12.000	107.000	.008	.214
	Hotelling's Trace	.273	2.431	12.000	107.000	.008	.214
	Roy's Largest Root	.273	2.431	12.000	107.000	.008	.214
FAC4_36	Pillai's Trace	.265	3.223	12.000	107.000	.001	.265
	Wilks' Lambda	.735	3.223	12.000	107.000	.001	.265
	Hotelling's	.361	3.223	12.000	107.000	.001	.265

	Trace						
	Roy's Largest Root	.361	3.223	12.000	107.000	.001	.265
FAC5_36	Pillai's Trace	.226	2.608	12.000	107.000	.004	.226
	Wilks' Lambda	.774	2.608	12.000	107.000	.004	.226
	Hotelling's Trace	.293	2.608	12.000	107.000	.004	.226
	Roy's Largest Root	.293	2.608	12.000	107.000	.004	.226
FAC6_36	Pillai's Trace	.148	1.555	12.000	107.000	.116	.148
	Wilks' Lambda	.852	1.555	12.000	107.000	.116	.148
	Hotelling's Trace	.174	1.555	12.000	107.000	.116	.148
	Roy's Largest Root	.174	1.555	12.000	107.000	.116	.148
FAC7_36	Pillai's Trace	.173	1.861	12.000	107.000	.048	.173
	Wilks' Lambda	.827	1.861	12.000	107.000	.048	.173
	Hotelling's Trace	.209	1.861	12.000	107.000	.048	.173
	Roy's Largest Root	.209	1.861	12.000	107.000	.048	.173
FAC8_36	Pillai's Trace	.072	.692	12.000	107.000	.756	.072
	Wilks' Lambda	.928	.692	12.000	107.000	.756	.072
	Hotelling's Trace	.078	.692	12.000	107.000	.756	.072
	Roy's Largest Root	.078	.692	12.000	107.000	.756	.072
FAC9_36	Pillai's Trace	.211	2.378	12.000	107.000	.009	.211
	Wilks' Lambda	.789	2.378	12.000	107.000	.009	.211
	Hotelling's Trace	.267	2.378	12.000	107.000	.009	.211
	Roy's Largest Root	.267	2.378	12.000	107.000	.009	.211
FAC10_36	Pillai's Trace	.111	1.116	12.000	107.000	.355	.111
	Wilks' Lambda	.889	1.116	12.000	107.000	.355	.111
	Hotelling's Trace	.125	1.116	12.000	107.000	.355	.111
	Roy's Largest Root	.125	1.116	12.000	107.000	.355	.111
FAC11_36	Pillai's Trace	.253	3.019	12.000	107.000	.001	.253
	Wilks' Lambda	.747	3.019	12.000	107.000	.001	.253
	Hotelling's Trace	.339	3.019	12.000	107.000	.001	.253
	Roy's Largest Root	.339	3.019	12.000	107.000	.001	.253
ITHIRD	Pillai's Trace	.186	.920	24.000	216.000	.574	.093
	Wilks' Lambda	.821	.921	24.000	214.000	.573	.094
	Hotelling's Trace	.209	.922	24.000	212.000	.572	.095
	Roy's Largest Root	.153	1.378	12.000	108.000	.187	.133

a Exact statistic

b The statistic is an upper bound on F that yields a lower bound on the significance level.

c Design:
Intercept+FAC1_36+FAC2_36+FAC3_36+FAC4_36+FAC5_36+FAC6_36+FAC7_36+FAC8_36+FAC9_36+FAC10_36+FAC11_36+ITHIRD

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Corrected Model	FAC1_38 REGR factor score 1 for analysis 38	40.260	13	3.097	4.027	.000	.307
	FAC2_38 REGR factor score 2 for analysis 38	19.153	13	1.473	1.554	.108	.146
	FAC3_38 REGR factor score 3 for analysis 38	26.407	13	2.031	2.292	.010	.202
	FAC4_38 REGR factor score 4 for analysis 38	37.084	13	2.853	3.584	.000	.283
	FAC5_38 REGR factor score 5 for analysis 38	29.512	13	2.270	2.640	.003	.225
	FAC6_38 REGR factor score 6 for analysis 38	20.680	13	1.591	1.702	.069	.158
	FAC7_38 REGR factor score 7 for analysis 38	14.120	13	1.086	1.097	.369	.108
	FAC8_38 REGR factor score 8 for analysis 38	22.258	13	1.712	1.858	.042	.170
	FAC9_38 REGR factor score 9 for analysis 38	24.283	13	1.868	2.065	.021	.185
	FAC10_38 REGR factor score 10 for analysis 38	11.898	13	.915	.907	.548	.091
	FAC11_38 REGR factor score 11 for analysis 38	3.170	13	.244	.225	.998	.024
	FAC12_38 REGR factor score 12 for analysis 38	13.341	13	1.026	1.029	.428	.102
Intercept	FAC1_38 REGR factor score 1 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC2_38 REGR factor score 2 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC3_38 REGR factor score 3 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC4_38 REGR factor score 4 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC5_38 REGR factor score 5 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC6_38 REGR factor score 6 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC7_38 REGR factor score 7 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC8_38 REGR factor score 8 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC9_38 REGR factor score 9 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC10_38 REGR factor score 10 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC11_38 REGR factor score 11 for analysis 38	.000	1	.000	.000	1.000	.000
	FAC12_38 REGR factor score 12 for analysis 38	.000	1	.000	.000	1.000	.000
FAC1_36	FAC1_38 REGR factor score 1 for analysis 38	19.938	1	19.938	25.928	.000	.180
	FAC2_38 REGR factor score 2 for analysis 38	8.813E-02	1	8.813E-02	.093	.761	.001
	FAC3_38 REGR factor score 3 for analysis 38	3.008	1	3.008	3.394	.068	.028
	FAC4_38 REGR factor	1.496	1	1.496	1.880	.173	.016

	score 4 for analysis 38						
	FAC5_38 REGR factor score 5 for analysis 38	1.040E-02	1	1.040E-02	.012	.913	.000
	FAC6_38 REGR factor score 6 for analysis 38	.188	1	.188	.201	.655	.002
	FAC7_38 REGR factor score 7 for analysis 38	2.728E-03	1	2.728E-03	.003	.958	.000
	FAC8_38 REGR factor score 8 for analysis 38	1.560E-03	1	1.560E-03	.002	.967	.000
	FAC9_38 REGR factor score 9 for analysis 38	1.107	1	1.107	1.224	.271	.010
	FAC10_38 REGR factor score 10 for analysis 38	.258	1	.258	.256	.614	.002
	FAC11_38 REGR factor score 11 for analysis 38	.581	1	.581	.536	.466	.005
	FAC12_38 REGR factor score 12 for analysis 38	.727	1	.727	.729	.395	.006
FAC2_36	FAC1_38 REGR factor score 1 for analysis 38	4.211E-03	1	4.211E-03	.005	.941	.000
	FAC2_38 REGR factor score 2 for analysis 38	.455	1	.455	.480	.490	.004
	FAC3_38 REGR factor score 3 for analysis 38	7.222	1	7.222	8.148	.005	.065
	FAC4_38 REGR factor score 4 for analysis 38	10.918	1	10.918	13.718	.000	.104
	FAC5_38 REGR factor score 5 for analysis 38	14.742	1	14.742	17.140	.000	.127
	FAC6_38 REGR factor score 6 for analysis 38	8.542E-02	1	8.542E-02	.091	.763	.001
	FAC7_38 REGR factor score 7 for analysis 38	2.523	1	2.523	2.547	.113	.021
	FAC8_38 REGR factor score 8 for analysis 38	.262	1	.262	.284	.595	.002
	FAC9_38 REGR factor score 9 for analysis 38	4.161E-04	1	4.161E-04	.000	.983	.000
	FAC10_38 REGR factor score 10 for analysis 38	2.866	1	2.866	2.839	.095	.023
	FAC11_38 REGR factor score 11 for analysis 38	5.332E-02	1	5.332E-02	.049	.825	.000
	FAC12_38 REGR factor score 12 for analysis 38	.292	1	.292	.293	.589	.002
FAC3_36	FAC1_38 REGR factor score 1 for analysis 38	9.179E-03	1	9.179E-03	.012	.913	.000
	FAC2_38 REGR factor score 2 for analysis 38	4.494E-03	1	4.494E-03	.005	.945	.000
	FAC3_38 REGR factor score 3 for analysis 38	3.640	1	3.640	4.106	.045	.034
	FAC4_38 REGR factor score 4 for analysis 38	.720	1	.720	.904	.344	.008
	FAC5_38 REGR factor score 5 for analysis 38	3.736	1	3.736	4.344	.039	.036
	FAC6_38 REGR factor score 6 for analysis 38	9.525	1	9.525	10.188	.002	.079
	FAC7_38 REGR factor score 7 for analysis 38	.535	1	.535	.540	.464	.005
	FAC8_38 REGR factor score 8 for analysis 38	1.148	1	1.148	1.246	.267	.010
	FAC9_38 REGR factor score 9 for analysis 38	1.660	1	1.660	1.836	.178	.015
	FAC10_38 REGR factor score 10 for analysis 38	5.587E-02	1	5.587E-02	.055	.814	.000
	FAC11_38 REGR factor	1.895E-02	1	1.895E-02	.017	.895	.000

	score 11 for analysis 38						
	FAC12_38 REGR factor score 12 for analysis 38	1.340E-02	1	1.340E-02	.013	.908	.000
FAC4_36	FAC1_38 REGR factor score 1 for analysis 38	6.245	1	6.245	8.121	.005	.064
	FAC2_38 REGR factor score 2 for analysis 38	2.169E-03	1	2.169E-03	.002	.962	.000
	FAC3_38 REGR factor score 3 for analysis 38	.713	1	.713	.804	.372	.007
	FAC4_38 REGR factor score 4 for analysis 38	.673	1	.673	.845	.360	.007
	FAC5_38 REGR factor score 5 for analysis 38	2.912	1	2.912	3.386	.068	.028
	FAC6_38 REGR factor score 6 for analysis 38	.729	1	.729	.780	.379	.007
	FAC7_38 REGR factor score 7 for analysis 38	4.464	1	4.464	4.507	.036	.037
	FAC8_38 REGR factor score 8 for analysis 38	7.329	1	7.329	7.953	.006	.063
	FAC9_38 REGR factor score 9 for analysis 38	.660	1	.660	.729	.395	.006
	FAC10_38 REGR factor score 10 for analysis 38	.628	1	.628	.622	.432	.005
	FAC11_38 REGR factor score 11 for analysis 38	.837	1	.837	.772	.381	.007
	FAC12_38 REGR factor score 12 for analysis 38	1.015	1	1.015	1.017	.315	.009
FAC5_36	FAC1_38 REGR factor score 1 for analysis 38	.868	1	.868	1.129	.290	.009
	FAC2_38 REGR factor score 2 for analysis 38	.388	1	.388	.409	.524	.003
	FAC3_38 REGR factor score 3 for analysis 38	4.916	1	4.916	5.546	.020	.045
	FAC4_38 REGR factor score 4 for analysis 38	6.801	1	6.801	8.545	.004	.068
	FAC5_38 REGR factor score 5 for analysis 38	.594	1	.594	.691	.408	.006
	FAC6_38 REGR factor score 6 for analysis 38	1.350	1	1.350	1.444	.232	.012
	FAC7_38 REGR factor score 7 for analysis 38	.790	1	.790	.798	.374	.007
	FAC8_38 REGR factor score 8 for analysis 38	.405	1	.405	.439	.509	.004
	FAC9_38 REGR factor score 9 for analysis 38	4.357	1	4.357	4.818	.030	.039
	FAC10_38 REGR factor score 10 for analysis 38	2.591	1	2.591	2.567	.112	.021
	FAC11_38 REGR factor score 11 for analysis 38	2.088E-02	1	2.088E-02	.019	.890	.000
	FAC12_38 REGR factor score 12 for analysis 38	5.747E-03	1	5.747E-03	.006	.940	.000
FAC6_36	FAC1_38 REGR factor score 1 for analysis 38	5.260E-03	1	5.260E-03	.007	.934	.000
	FAC2_38 REGR factor score 2 for analysis 38	.638	1	.638	.673	.414	.006
	FAC3_38 REGR factor score 3 for analysis 38	5.777	1	5.777	6.518	.012	.052
	FAC4_38 REGR factor score 4 for analysis 38	4.677	1	4.677	5.876	.017	.047
	FAC5_38 REGR factor score 5 for analysis 38	.773	1	.773	.898	.345	.008
	FAC6_38 REGR factor	1.686	1	1.686	1.804	.182	.015

	score 6 for analysis 38						
	FAC7_38 REGR factor score 7 for analysis 38	6.383E-04	1	6.383E-04	.001	.980	.000
	FAC8_38 REGR factor score 8 for analysis 38	.765	1	.765	.830	.364	.007
	FAC9_38 REGR factor score 9 for analysis 38	6.004E-04	1	6.004E-04	.001	.979	.000
	FAC10_38 REGR factor score 10 for analysis 38	3.210E-02	1	3.210E-02	.032	.859	.000
	FAC11_38 REGR factor score 11 for analysis 38	.205	1	.205	.189	.664	.002
	FAC12_38 REGR factor score 12 for analysis 38	7.902E-03	1	7.902E-03	.008	.929	.000
FAC7_36	FAC1_38 REGR factor score 1 for analysis 38	2.759	1	2.759	3.587	.061	.030
	FAC2_38 REGR factor score 2 for analysis 38	2.091	1	2.091	2.206	.140	.018
	FAC3_38 REGR factor score 3 for analysis 38	.196	1	.196	.221	.639	.002
	FAC4_38 REGR factor score 4 for analysis 38	.206	1	.206	.259	.612	.002
	FAC5_38 REGR factor score 5 for analysis 38	3.010E-02	1	3.010E-02	.035	.852	.000
	FAC6_38 REGR factor score 6 for analysis 38	1.582	1	1.582	1.693	.196	.014
	FAC7_38 REGR factor score 7 for analysis 38	2.967E-02	1	2.967E-02	.030	.863	.000
	FAC8_38 REGR factor score 8 for analysis 38	5.377	1	5.377	5.835	.017	.047
	FAC9_38 REGR factor score 9 for analysis 38	.316	1	.316	.349	.556	.003
	FAC10_38 REGR factor score 10 for analysis 38	2.973E-02	1	2.973E-02	.029	.864	.000
	FAC11_38 REGR factor score 11 for analysis 38	5.675E-02	1	5.675E-02	.052	.819	.000
	FAC12_38 REGR factor score 12 for analysis 38	4.104	1	4.104	4.116	.045	.034
FAC8_36	FAC1_38 REGR factor score 1 for analysis 38	1.627	1	1.627	2.116	.148	.018
	FAC2_38 REGR factor score 2 for analysis 38	2.956	1	2.956	3.119	.080	.026
	FAC3_38 REGR factor score 3 for analysis 38	.476	1	.476	.537	.465	.005
	FAC4_38 REGR factor score 4 for analysis 38	1.697E-02	1	1.697E-02	.021	.884	.000
	FAC5_38 REGR factor score 5 for analysis 38	3.260E-02	1	3.260E-02	.038	.846	.000
	FAC6_38 REGR factor score 6 for analysis 38	.145	1	.145	.156	.694	.001
	FAC7_38 REGR factor score 7 for analysis 38	.142	1	.142	.143	.706	.001
	FAC8_38 REGR factor score 8 for analysis 38	7.926E-02	1	7.926E-02	.086	.770	.001
	FAC9_38 REGR factor score 9 for analysis 38	2.869E-02	1	2.869E-02	.032	.859	.000
	FAC10_38 REGR factor score 10 for analysis 38	.684	1	.684	.678	.412	.006
	FAC11_38 REGR factor score 11 for analysis 38	.452	1	.452	.418	.519	.004
	FAC12_38 REGR factor score 12 for analysis 38	1.620E-02	1	1.620E-02	.016	.899	.000
FAC9_36	FAC1_38 REGR factor	3.968	1	3.968	5.160	.025	.042

	score 1 for analysis 38						
	FAC2_38 REGR factor score 2 for analysis 38	1.913E-03	1	1.913E-03	.002	.964	.000
	FAC3_38 REGR factor score 3 for analysis 38	1.590E-04	1	1.590E-04	.000	.989	.000
	FAC4_38 REGR factor score 4 for analysis 38	1.107	1	1.107	1.391	.241	.012
	FAC5_38 REGR factor score 5 for analysis 38	.710	1	.710	.825	.366	.007
	FAC6_38 REGR factor score 6 for analysis 38	1.612	1	1.612	1.725	.192	.014
	FAC7_38 REGR factor score 7 for analysis 38	.551	1	.551	.556	.457	.005
	FAC8_38 REGR factor score 8 for analysis 38	3.395	1	3.395	3.685	.057	.030
	FAC9_38 REGR factor score 9 for analysis 38	4.598	1	4.598	5.084	.026	.041
	FAC10_38 REGR factor score 10 for analysis 38	1.200	1	1.200	1.189	.278	.010
	FAC11_38 REGR factor score 11 for analysis 38	7.196E-03	1	7.196E-03	.007	.935	.000
	FAC12_38 REGR factor score 12 for analysis 38	2.125	1	2.125	2.131	.147	.018
FAC10_36	FAC1_38 REGR factor score 1 for analysis 38	.460	1	.460	.599	.441	.005
	FAC2_38 REGR factor score 2 for analysis 38	.546	1	.546	.576	.449	.005
	FAC3_38 REGR factor score 3 for analysis 38	1.129E-02	1	1.129E-02	.013	.910	.000
	FAC4_38 REGR factor score 4 for analysis 38	2.717	1	2.717	3.413	.067	.028
	FAC5_38 REGR factor score 5 for analysis 38	9.447E-02	1	9.447E-02	.110	.741	.001
	FAC6_38 REGR factor score 6 for analysis 38	1.133	1	1.133	1.212	.273	.010
	FAC7_38 REGR factor score 7 for analysis 38	.132	1	.132	.134	.715	.001
	FAC8_38 REGR factor score 8 for analysis 38	2.141	1	2.141	2.324	.130	.019
	FAC9_38 REGR factor score 9 for analysis 38	.177	1	.177	.195	.659	.002
	FAC10_38 REGR factor score 10 for analysis 38	4.321E-02	1	4.321E-02	.043	.836	.000
	FAC11_38 REGR factor score 11 for analysis 38	.391	1	.391	.361	.549	.003
	FAC12_38 REGR factor score 12 for analysis 38	1.269	1	1.269	1.272	.262	.011
FAC11_36	FAC1_38 REGR factor score 1 for analysis 38	1.535	1	1.535	1.997	.160	.017
	FAC2_38 REGR factor score 2 for analysis 38	10.927	1	10.927	11.528	.001	.089
	FAC3_38 REGR factor score 3 for analysis 38	2.786E-02	1	2.786E-02	.031	.860	.000
	FAC4_38 REGR factor score 4 for analysis 38	.861	1	.861	1.082	.300	.009
	FAC5_38 REGR factor score 5 for analysis 38	.553	1	.553	.643	.424	.005
	FAC6_38 REGR factor score 6 for analysis 38	.194	1	.194	.208	.650	.002
	FAC7_38 REGR factor score 7 for analysis 38	.497	1	.497	.502	.480	.004
	FAC8_38 REGR factor	.733	1	.733	.795	.374	.007

	score 8 for analysis 38						
	FAC9_38 REGR factor score 9 for analysis 38	8.576	1	8.576	9.482	.003	.074
	FAC10_38 REGR factor score 10 for analysis 38	2.854	1	2.854	2.827	.095	.023
	FAC11_38 REGR factor score 11 for analysis 38	.136	1	.136	.125	.724	.001
	FAC12_38 REGR factor score 12 for analysis 38	.376	1	.376	.377	.540	.003
ITHIRD	FAC1_38 REGR factor score 1 for analysis 38	.645	2	.323	.420	.658	.007
	FAC2_38 REGR factor score 2 for analysis 38	1.974	2	.987	1.041	.356	.017
	FAC3_38 REGR factor score 3 for analysis 38	1.822	2	.911	1.028	.361	.017
	FAC4_38 REGR factor score 4 for analysis 38	4.020	2	2.010	2.526	.084	.041
	FAC5_38 REGR factor score 5 for analysis 38	2.906	2	1.453	1.690	.189	.028
	FAC6_38 REGR factor score 6 for analysis 38	.577	2	.288	.308	.735	.005
	FAC7_38 REGR factor score 7 for analysis 38	3.109	2	1.554	1.569	.213	.026
	FAC8_38 REGR factor score 8 for analysis 38	9.199E-02	2	4.599E-02	.050	.951	.001
	FAC9_38 REGR factor score 9 for analysis 38	1.928	2	.964	1.066	.348	.018
	FAC10_38 REGR factor score 10 for analysis 38	.344	2	.172	.171	.843	.003
	FAC11_38 REGR factor score 11 for analysis 38	.619	2	.310	.286	.752	.005
	FAC12_38 REGR factor score 12 for analysis 38	3.389	2	1.695	1.699	.187	.028
Error	FAC1_38 REGR factor score 1 for analysis 38	90.740	118	.769			
	FAC2_38 REGR factor score 2 for analysis 38	111.847	118	.948			
	FAC3_38 REGR factor score 3 for analysis 38	104.593	118	.886			
	FAC4_38 REGR factor score 4 for analysis 38	93.916	118	.796			
	FAC5_38 REGR factor score 5 for analysis 38	101.488	118	.860			
	FAC6_38 REGR factor score 6 for analysis 38	110.320	118	.935			
	FAC7_38 REGR factor score 7 for analysis 38	116.880	118	.991			
	FAC8_38 REGR factor score 8 for analysis 38	108.742	118	.922			
	FAC9_38 REGR factor score 9 for analysis 38	106.717	118	.904			
	FAC10_38 REGR factor score 10 for analysis 38	119.102	118	1.009			
	FAC11_38 REGR factor score 11 for analysis 38	127.830	118	1.083			
	FAC12_38 REGR factor score 12 for analysis 38	117.659	118	.997			
Total	FAC1_38 REGR factor score 1 for analysis 38	131.000	132				
	FAC2_38 REGR factor score 2 for analysis 38	131.000	132				
	FAC3_38 REGR factor	131.000	132				

	score 3 for analysis 38		
	FAC4_38 REGR factor score 4 for analysis 38	131.000	132
	FAC5_38 REGR factor score 5 for analysis 38	131.000	132
	FAC6_38 REGR factor score 6 for analysis 38	131.000	132
	FAC7_38 REGR factor score 7 for analysis 38	131.000	132
	FAC8_38 REGR factor score 8 for analysis 38	131.000	132
	FAC9_38 REGR factor score 9 for analysis 38	131.000	132
	FAC10_38 REGR factor score 10 for analysis 38	131.000	132
	FAC11_38 REGR factor score 11 for analysis 38	131.000	132
	FAC12_38 REGR factor score 12 for analysis 38	131.000	132
Corrected Total	FAC1_38 REGR factor score 1 for analysis 38	131.000	131
	FAC2_38 REGR factor score 2 for analysis 38	131.000	131
	FAC3_38 REGR factor score 3 for analysis 38	131.000	131
	FAC4_38 REGR factor score 4 for analysis 38	131.000	131
	FAC5_38 REGR factor score 5 for analysis 38	131.000	131
	FAC6_38 REGR factor score 6 for analysis 38	131.000	131
	FAC7_38 REGR factor score 7 for analysis 38	131.000	131
	FAC8_38 REGR factor score 8 for analysis 38	131.000	131
	FAC9_38 REGR factor score 9 for analysis 38	131.000	131
	FAC10_38 REGR factor score 10 for analysis 38	131.000	131
	FAC11_38 REGR factor score 11 for analysis 38	131.000	131
	FAC12_38 REGR factor score 12 for analysis 38	131.000	131

a R Squared = .307 (Adjusted R Squared = .231)
b R Squared = .146 (Adjusted R Squared = .052)
c R Squared = .202 (Adjusted R Squared = .114)
d R Squared = .283 (Adjusted R Squared = .204)
e R Squared = .225 (Adjusted R Squared = .140)
f R Squared = .158 (Adjusted R Squared = .065)
g R Squared = .108 (Adjusted R Squared = .009)
h R Squared = .170 (Adjusted R Squared = .078)
i R Squared = .185 (Adjusted R Squared = .096)
j R Squared = .091 (Adjusted R Squared = -.009)
k R Squared = .024 (Adjusted R Squared = -.083)
l R Squared = .102 (Adjusted R Squared = .003)

APPENDIX XI

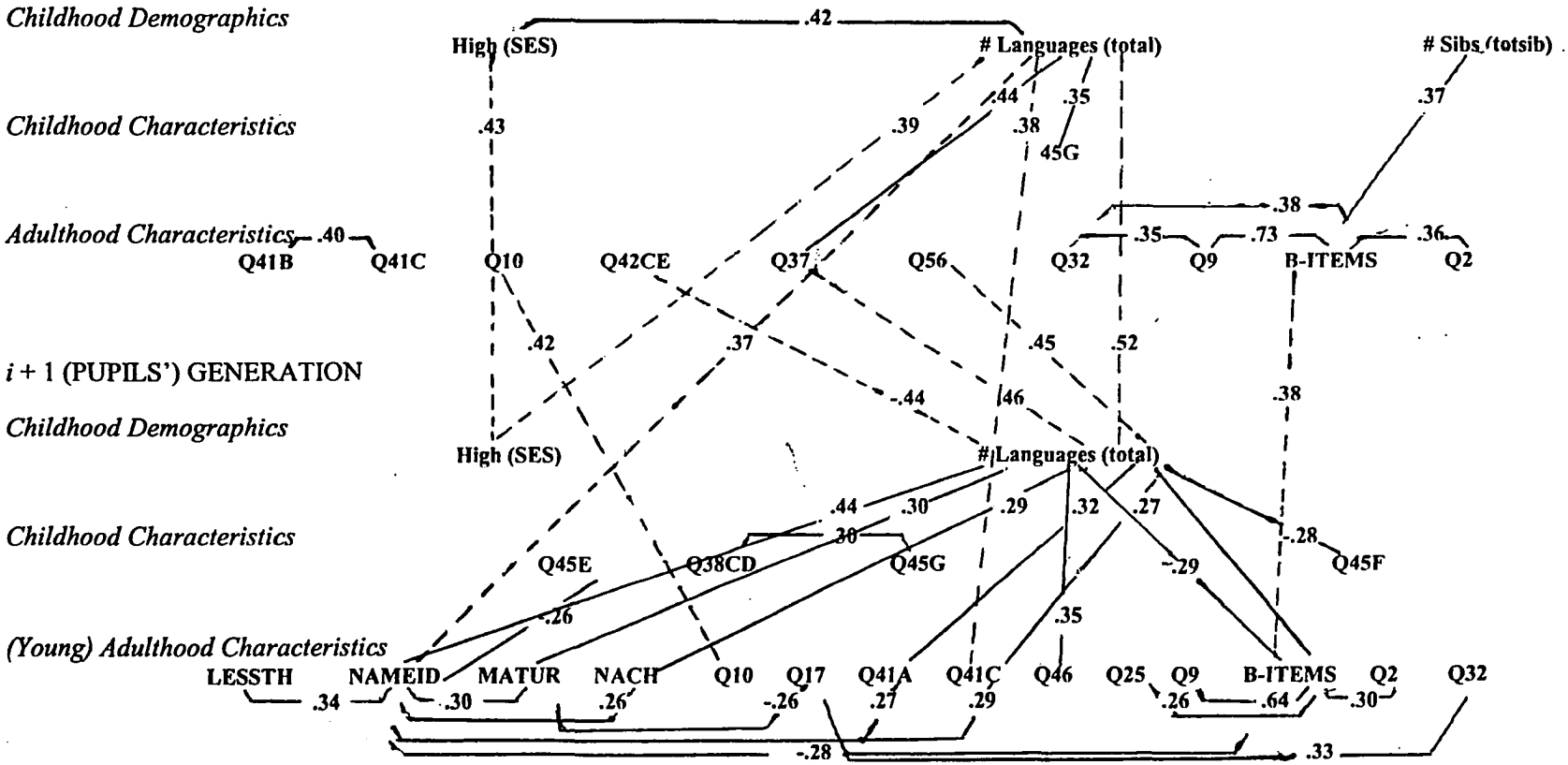
PATHFLOW OF THE STRONGEST CROSS-GENERATIONAL AND DEVELOPMENTAL CORRELATIONS ENCOUNTERED BETWEEN SPECIFIC VARIABLES

Pathflow of the strongest (Bonferroni-adjusted $\alpha = .025$) cross-generational and developmental correlations encountered between specific variables

(Broken lines __ __ __ = *cross-generational* correlations. KINDVAL, not available for the *i* generation, was omitted from the table)

i (PARENTAL) GENERATION

For definition of variables see Legend, p. 154 and Appendix II, pp. 303 ff.



NB: The coefficients are bivariate (Pearson) 2-tailed correlation coefficients; *not* fractional standardized regression coefficients used by S. Wright.

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