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An exploration of the macrostructural implications of the Holland theory of careers

James Whyte
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AN EXPLORATION OF THE MACROSTRUCTURAL IMPLICATIONS OF THE HOLLAND THEORY OF CAREERS

Iowa State University

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300 N. Zeeb Road, Ann Arbor, MI 48106
An exploration of the macrostructural implications of the Holland theory of careers

by

James Whyte

A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

Department: Sociology and Anthropology
Major: Sociology

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Iowa State University
Ames, Iowa
1986
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ABSTRACT

The Holland theory of careers (Holland, 1984) rests on an implicit assumption of isomorphism between the relative frequency distributions of occupations and personalities congruent to those occupations. A number of mechanisms are described which theoretically could act to generate a tendency towards isomorphism. Elements of the sociological linkage hypothesis are shown to be germane to the processes by which isomorphism may be generated. The version of the linkage hypothesis (Mortimer and Kumka, 1982) which posits a relationship between the quality of the father/son relationship and intergenerational value transmission is tested using the Holland RIASEC taxonomy.
CHAPTER I

The relationship between personality and social structure must surely be one of the grand themes of classical and contemporary social science. Different disciplines have addressed this issue from a variety of perspectives but within both psychology and sociology are long standing traditions that focus on the relationship between personality and the division of labor.

In psychology, a major theory concerning the relationship between personality and work is the Holland theory of careers (Holland, 1959; 1973; 1984). Widely used as a theoretical perspective in research and as a tool in vocational counseling, the Holland theory has managed to sustain interest for a quarter of a century. However, to date, there has been remarkably little use of the concepts and propositions of the Holland theory by sociologists. This apparent lack of interest may be doubly unfortunate. The Holland theory has been described as one of the most widely researched classifications in applied psychology (Eberhardt and Muchinsky, 1984). If so, it should have some relevance to sociology. Moreover, in terms of the substantive issues it addresses, the Holland theory is often very close to some of the major concerns of occupational sociology.

The present effort is undertaken with two major goals in mind. First, to examine an issue that has generated significant research interest in both sociology and psychology: the influence of paternal occupation on sons’ personality and vocational interests. The second goal is to demonstrate that the Holland theory and sociology have relevance and utility for each other.
A preliminary note concerning the organization of the argument will be useful. After a short introduction to the Holland theory of careers, some implications of the theory will be explored. This analysis will be intentionally abstract and largely unconcerned with empirical referents except insofar as these may be useful to illustrate a point. The model articulated will be admittedly an overly mechanical and simplistic vision of the relationship between work and personality. The rationale for proceeding in this fashion is simply that doing so provides a means of sharpening and focusing some ideas without having to deal with the qualifications and hedges that reality inevitably imposes on theory. For this first phase of the argument, the concentration is on the articulation of ideas rather than on the demonstration of their empirical validity. Thus, for this stage of the discussion, the criterion of evaluation should be logical rather than empirical.

A second stage of the argument will examine the plausibility of the model developed in the first section. This examination will draw upon the extant research literature. This section will also serve as an introduction to the third and final section which will report on empirical tests of some of the ideas developed in the earlier discussion.

Holland's Theory of Careers

Only the briefest description of the Holland theory of careers need be presented here. The theory has several dozen explicit propositions and decades of research have added layers of nuance to these. The best account of the theory and the research relevant to it is Holland's (1984) recent statement; a useful summary and critique can be found in Osipow (1983). Unless otherwise stated, the discussion here will be based on the 1984 statement of the theory.
The Holland theory delineates six basic taxa which are used to classify personalities, occupations and environments. The six taxa and their mnemonics are: Realistic (R), Artistic (A), Investigative (I), Social (S), Enterprising (E), and Conventional (C). Each type has its own cluster of defining qualities and characteristics. The specific qualities of the various taxa play no role in the present discussion and need not be described here. Complete descriptions can be found in Holland (1984). The types are more or less similar to each other; the degree of similarity being indicated by the relative positions of the types in a hexagonal arrangement (see Fig. 1). The general rule of thumb to be followed is that the closer the types are to each other on the hexagon, the greater the similarity.

Personalities and environments are classified as particular combinations of the six basic types. The classification convention is to use a three letter code to denote the personality or occupational pattern. The sequence of letters in the pattern code indicates the relative importance of a particular element. Thus, a personality with the pattern RIA would be one which most resembles the Realistic type but which also has resemblances to the Investigative and Artistic types. The first letter of the code is often referred to as the personality type or high point code.

The relative utility of types and patterns as analytical units will prove to be a matter of some importance. However, an examination of this issue can best be deferred until it is more germane to the issue at hand. At this point, it suffices to note that for the initial examination of some of the implications of the Holland theory, the discussion will be couched in terms of types (i.e., high point codes) rather than patterns. In the present argument, this is done for convenience and heuristic purposes only.
FIG. 1. Relative frequency distribution of jobs and people in the Holland hexagon. (Figures from Table 1)
and does not indicate any analytical preference on the part of the present author.

One of the central arguments of the Holland theory is that individuals will tend to seek out occupations and work environments that will be congruent with the individual's personality. Thus, a person with the personality code RIA would be expected to seek an occupation with the code RIA or one similar to it. The theory further states that individuals who achieve personality/environment congruence will be more satisfied with their jobs than will incongruent people.

The Isomorphism Assumption

It is useful at this point to distinguish two interpretations that can be applied to the Holland theory. The theory can be viewed as a description of occupational search behavior (i.e., individuals seek jobs that will result in congruence) and as a description of search outcome (i.e., people achieve congruence).

If the Holland theory is to provide an adequate account of search outcome, then it must be the case that there is a measure of isomorphism between the relative frequency distributions of personality and occupational types and patterns. To illustrate this point, the following assumptions must be made. First, that the personality type shapes the direction of occupational choice. This is in fact an explicit prediction of the theory (Holland, 1984:30). A second assumption is that congruence consists of a match between the respective high point codes of an occupation and a personality. This is consistent with the theory and is the measure of congruence often used in research. However, it should be stressed that this is something of a special case definition of congruence. In order to distinguish this form of congruence from congruence based on
the comparison of patterns, the term "type congruence" will be used here.

Given the above, some hypothetical figures will be used to illustrate the necessity of isomorphism. Imagine that 25% of the labor force is classified as R in terms of personality type. For most of these people to be able to achieve type congruence, it must also be the case that the relative frequency of R occupations approaches 25%. More generally, to the extent that the relative frequency of occupations of a given type is less than the relative frequency of personalities of that type, the Holland theory declines in potential utility as a description of placement outcome. As a theory of occupational placement outcome, the Holland theory rests on an implicit assumption of isomorphism between the relative frequency distributions of occupational and personality types. As a simple matter of arithmetic, the validity of this assumption sets the bounds of the theory as an adequate description of placement outcomes. However, it should be noted that the empirical validity of the isomorphism assumption does not affect the potential utility of the theory as a description of occupational search behavior. Conceivably, people could still seek type congruence even if their probability of actually achieving it is quite low.

Forms of Incongruence

A useful distinction can be drawn between two distinct forms of type incongruence. Even in a situation where there is a high degree of isomorphism between the relative frequency distributions of occupational and personality types, incongruence might be relatively common. People might make vocational mistakes or factors such as economics, education, geography or plain luck could all act to shunt people into incongruent situations. Still, under a condition of isomorphism between the relative frequency distributions of personalities and occupations, there would at
least be the potential for most people to achieve congruence. It is proposed here to denote incongruence under a condition of isomorphism as "circumstantial incongruence." Since the Holland theory predicts that people tend to leave incongruent situations, it could be argued that circumstantial incongruence, while always present, is, at the individual level, always in the process of at least potentially successful resolution. In a sense, people in incongruent situations can be seen as trading jobs with each over time as they attempt to achieve congruence.

Circumstantial incongruence can be distinguished from "structural incongruence." This can be conceived as existing when there is relatively low isomorphism between the relative frequency distributions of occupational and personality types. In such a situation, for many people the vocational search process will not and cannot lead to type congruence; jobs of the required type simply do not exist in sufficient number relative to the demand for them. For example, imagine that 10% of males are type A personalities but only 3% of occupations are type A. In this instance, the majority of the A males would have to settle for type incongruence.

Some data presented by Holland (1979:77) suggest that type incongruence may, in fact, be a relatively common condition.

Using the above figures, it is apparent that R, C and E type males are not subject to structural incongruence while S, I and A males are, to varying degrees, subject to structural incongruence. Some caveats are in order. First, it must be stressed that type congruence is something of a special case and does not exhaust the measurement possibilities. If the relative frequency distributions of occupational and personality patterns were examined using a more refined measure of congruence, it might be the
Table 1. Relative Frequency Distributions of People and Occupations by Holland Type

<table>
<thead>
<tr>
<th>Holland code</th>
<th>Jobs(^a)</th>
<th>People(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic (R)</td>
<td>.51</td>
<td>.40</td>
</tr>
<tr>
<td>Investigative (I)</td>
<td>.09</td>
<td>.23</td>
</tr>
<tr>
<td>Artistic (A)</td>
<td>.02</td>
<td>.08</td>
</tr>
<tr>
<td>Social (S)</td>
<td>.07</td>
<td>.20</td>
</tr>
<tr>
<td>Enterprising (E)</td>
<td>.25</td>
<td>.06</td>
</tr>
<tr>
<td>Conventional (C)</td>
<td>.07</td>
<td>.03</td>
</tr>
</tbody>
</table>

\(^a\)Data adapted from Holland (1979:77).
\(^b\)Data adapted from Holland (1979:77).
case that the apparent structural incongruence disappears. It must also be noted that the data used in this example is based upon the assessment of personality types of a high school population base. L. Gottfredson and Becker (1981) have shown that the distribution of types changes as older populations are examined and that this change is such as to bring the distribution of people by type more closely in line with the distribution of occupations by type.

Despite the qualifications just noted, the data in Table 1 are still quite useful in illustrating the possibility that structural incongruence may be quite common, at least the type level. The determination of the actual extent to which structural incongruence exists is not a matter that need detain the present discussion. The major interest here is to explore some of the logical implications of structural incongruence. This can be done independently of the determination of the actual extent of the problem.

One implication of structural incongruence has already been noted; the utility of the Holland theory as a description of placement outcome is a function of the empirical validity of the isomorphism assumption. Thus the level of structural incongruence sets constraints on the potential adequacy of the Holland theory as a description of placement outcome. Another, more interesting, implication stems from the relationship Holland posits between congruence and occupational satisfaction. Given this relationship, a decrease in isomorphism and an attendant increase in structural incongruence means that more and more people would be expected to be unhappy in their jobs. In this sense, the validity of the isomorphism assumption can even be viewed as an index of the potential of a given social system to satisfy the occupational aspirations of its members.
Social Structure and Personality

At this point, it is necessary to address an important question. Is there any particular reason to expect any degree of isomorphism between the relative frequency distributions of occupations and personalities? Granted, such a tendency would be quite convenient for the Holland theory, but convenience and evidence are separate matters. However, within sociology, there is a rather longstanding and deeply rooted assumption that there exists some correspondence between the needs and aspirations of the members of a society and the ability of that society to satisfy those needs and aspirations.

In this connection, it is useful to consider the Hobbesian question: "How is society possible?" In developing a response to the Hobbesian query, Talcott Parsons (1951) delineated two major "functional prerequisites" that characterize the relationship between personality and the social system. The social system must be able to satisfy the needs of individuals and the individuals must be motivated to do the things necessary to keep the social system functioning. Parsons saw these functional prerequisites as linked; the ability of the social system to motivate individuals is conditional upon its ability to satisfy the needs of those individuals.

Much the same basic argument has been quite elegantly stated by Fromm (1949:409):

In order that any society may function well, its members must acquire the kind of character which makes them want to act in the way they have to as members of the society...They have to desire what objectively is necessary for them to do.

That Parsons, the functionalist sociologist, and Fromm, the Marxist psychologist, could posit much the same solution to the Hobbesian problem is tribute to the strength of the notion that personality and social
structure are systemically linked. Indeed, it seems fairly safe to argue that the belief that there is a relationship between social stability and individual satisfaction comes quite close to being a "domain assumption" (Gouldner, 1970) of sociology. However, not all, it should be noted are willing to concede the validity of assuming that there is a connection between the ability of a social system to survive and its abilities to satisfy its members. Revel (1984:17) for instance, has recently argued that this is a special conceit of democrats.

The division of labor is a critical component of any social system and the belief that there is a relationship between personality, work and social stability is quite ancient. In describing his vision of the ideal society, Plato (The Republic, 369C-371B) argued that society would benefit if workers were restricted to the tasks to which nature suits them. Campbell's 1747 The London Tradesman is one of the ancestors of today's vocational guidance industry. He recounts several anecdotes of the individual distress caused when people enter positions for which their "natural genius" does not suit them. Campbell (1747:13-14) was concerned with the social consequences of such mismatches and argued that economic productivity and social harmony are are dependent upon the correct matching of an individual and his trade:

Let us but class ourselves in the order which nature has severally allotted us, and we shall find that this machine of the universe will move uniformly without rubs; and every individual in his sphere, act a real and natural character.

The same sentiment is stated by Emile Durkheim (1964:375) in his classic analysis The Division of Labor:

...we are not, from birth, predestined to some special position; but we do have tastes and aptitudes which limit our choice. If no care is taken of them, if they are ceaselessly disturbed by our daily occupations, we shall suffer and seek a way of putting an end to our
suffering. But there is no other way out than to change the established order and to set up a new one.

While arguments from social theorists and reformers do not demonstrate the existence of a tendency towards isomorphism between the distributions of occupations and personalities, they do provide a rationale for looking for such a tendency. It has already been demonstrated that, given the Holland theory's postulated relationship between congruence and satisfaction, the level of isomorphism can be viewed as an index of the ability of a social system to satisfy the personality needs of its members. A long standing tradition of social theory argues that such an ability is necessary for the persistence of social order. Low isomorphism, or a high level of structural incongruence, would thus appear to be quite dysfunctional for the maintenance of a social system. It is reasonable then to expect to find some set of systemic processes or mechanisms which could act to reduce or at least contain such potentially disruptive conditions.

The Mechanisms of Isomorphism

The focus of the discussion will now turn to describing some mechanisms which may link together the relative frequency distributions of personalities and occupations in such a way as to generate or maintain a condition of isomorphism between the two distribution curves. Given the apparent lack of isomorphism, at least for some types, noted in the example cited earlier, it is perhaps more realistic to conceive the issue in terms of mechanisms that generate a tendency towards isomorphism. That is to say, even if the data for a given point in time indicates a lack of isomorphism, it might still be the case that the system over time tends towards isomorphism. Perhaps the system is in a transition period in which the two distributions are out of phase but in which they are also moving towards
isomorphism. If this is the case, a condition of high structural incongruence may be both anomalous and temporary as various processes operate over time to eliminate it. Another possibility could be a situation in which isomorphism is never really attained but various mechanisms act to reduce or contain the extent of structural incongruence. Indeed, this latter possibility might well be the most likely outcome given the fact that changes in the relative frequency of occupational and personality types may occur at different rates.

There is some reason to suspect that significant changes in the relative frequency of occupational types can occur fairly quickly. Gottfredson and Daiger (1977) have compared 1960 and 1970 census data and concluded that R type jobs declined from 54.7% to 47.6% of total employment during this period. Thus, even in the relatively short period between censuses, it appears that significant structural change can occur in the relative frequency distribution curve of occupational types.

Some possible sources of change in the relative frequency distribution of occupations readily suggest themselves. Market demand might be one factor; consumers opt for Toyotas rather than Fords and thereby contribute to a reduction in the frequency of auto assembly jobs in the United States. Demographic fluctuations could also be a factor, a society with a relative large proportion of children might require more teachers than a society with relatively fewer children. Also, social technology such as managerial styles may act to change the psychological content and meaning of some jobs. It suffices here to note that the relative frequency distribution of occupations changes and apparently can change rather rapidly.
For the present discussion, the major point of interest is to determine how the relative frequency distribution of personalities may change so as to generate a tendency towards isomorphism. This is not to preclude the possibility that it may be changes in the relative frequency distribution of occupations that generate a tendency towards isomorphism. Such may indeed be the case but an exploration of this issue will not be attempted here. The Holland theory is more explicit concerning the development of personalities than occupations and the present effort will be limited to examining mechanisms that may generate changes in the relative frequency of personalities.

Holland does not present a complete explanation of personality development but the general process is conceived of as an interaction between heredity and environment. Parental influence is involved in this process and Holland (1984:15) argues that, to a degree at least, "types produce types." It is this types produce types thesis which will help to direct the present argument. Even so, this approach is a limited one since the types produce types thesis is not construed as the sole or even most important explanation of personality type development.

To the extent that the types produce types thesis is true, it is possible to infer a relationship between paternal occupation and son's personality type. This follows from the basic argument of the Holland theory that personality type shapes occupational choice. Given this, it would be expected that paternal occupational type will be related to paternal personality type. Thus, the Holland theory views paternal personality type as a factor in both paternal occupational choice and filial personality type development. Therefore, it is reasonable to expect a relationship between paternal occupational type and filial personality
type. It should be stressed again that the discussion here is phrased in terms of types only for heuristic purposes. Later, attention will focus on patterns and the types produce types thesis will be recast as a patterns produce patterns thesis.

The above argument provides a means of integrating elements of the Holland theory with some elements of occupational sociology. Within occupational sociology, the notion that there is a relationship between paternal occupation and son's personality has come to be called the "linkage hypothesis." Various permutations of this hypothesis will be examined in the next chapter. The general argument is that fathers directly or indirectly transmit occupation related personality traits or value orientations to their sons. Of particular interest to the present inquiry is a suggestion by Mortimer (1974) that such transmission is less likely when the father is dissatisfied with his occupation. Given this, and given the relationship Holland posits between congruence and job satisfaction, it could then be argued that paternal personality/occupation type incongruence reduces the probability that types will produce types.

If the above argument can be accepted, then it is possible to also argue that intergenerational type replication is most likely to occur when there is a condition of isomorphism between the relative frequency distributions of personality and occupational types. This is because under isomorphism, structural incongruence should be low and most people would be expected to have at least the potential to achieve type congruence. Under the condition of isomorphism, there should be a high level of occupational satisfaction and thus a relatively high probability of father/son replication. Over generations, the relative frequency distribution of personality types would repeat itself and barring change in the relative
frequency distribution of occupations, isomorphism should endure.

The relationship postulated between paternal personality/occupational type congruence and the probability of intergenerational type replication can also be used to explain how a system may generate a tendency towards isomorphism even when change occurs in the relative frequency distribution of occupations. For ease of reference, the general process by which the relative frequency distribution of personalities changes so as to generate a tendency towards isomorphism will be referred to as "redistribution." A number of discrete redistribution mechanisms can be specified using the arguments presented above.

Imagine that an initially isomorphic system loses isomorphism because of changes in the relative frequency distribution of occupational types. Structural incongruence would now be widespread but there would also be a tendency for the system to attempt to correct itself. This correction would be based on the fact that incongruent people would be less likely to have offspring of the same type as themselves. In effect, incongruent people can be viewed as "pushing" their offspring out of the personality types that are subject to structural incongruence. Over time, this would be expected to result in a sort of intergenerational migration from types subject to structural incongruence to types not subject to it. This should result in a redistribution of the relative frequency of personality types so as to generate a tendency towards isomorphism. This describes what shall be referred to here as type I redistribution.

The understanding of type I redistribution may be enhanced by a simple, albeit highly artificial, example. Imagine a society in which every adult has a job but in which there is also a high level of structural incongruence: there are more I, A and S type people than there are I, A
and S type jobs. Thus, many of the I, A and S people would be expected to find themselves in incongruent jobs and would hence be dissatisfied. By contrast, the R, C and E type people would be expected to have a higher probability of replicating parental type. Since many of the I, A and S people are incongruent, their offspring would be expected to have a lower probability of replicating parental type, at least this would be the case for those offspring whose parents are in fact incongruent.

Now, for purposes of argument only, assume that the offspring who are "pushed" away from the parental type have an equal probability of becoming another type. For example, an incongruent A father "pushes" his son away from the A type and the son has then an equal chance of becoming an I, S, C, E or R. If the son becomes an R, C or E, he will have escaped structural incongruence and in turn, his own offspring should therefore have a higher probability of replicating his type. By contrast, if the son becomes an I or S, he would be subject to structural incongruence and his offspring would be expected to have a lower probability of replicating his type.

With the process of type I redistribution, the personality types subject to structural incongruence are expected to have a lower frequency of cross generational type replication than the types not subject to structural incongruence. Thus, over time, the type categories subject to structural incongruence should tend to lose membership while the other categories should tend to increase. This should generate systemic movement towards isomorphism.

Type II redistribution is also based on the relationship postulated between paternal personality/occupational congruence and the probability of cross generational type replication. However, now the focus must turn to
an attribute of personality patterns. An important quality of the personality pattern is its level or degree of differentiation (Holland, 1984:5). This refers to the degree to which there are well defined differences in the saliency of the various types in the pattern. For the present it suffices to introduce and briefly define this concept. The technique used to calculate differentiation will be described in a later chapter. A pattern in which the various types have equal or almost equal weight would be undifferentiated; a pattern in which one type predominates would be highly differentiated.

The concept of differentiation can be used to specify type II redistribution. First, assume that paternal personality/occupation incongruence increases the probability that offspring’s personality pattern will be undifferentiated. In effect, this could be viewed as a special case of the process described for type I redistribution. In this circumstance, offspring, while still "pushed" away from the paternal type, become undifferentiated instead of developing an orientation to one of the other types. A second component of type II redistribution comes from Holland’s (1984:54) proposition that people with undifferentiated personality patterns are more likely to achieve congruence by changing their personalities to fit their environment. With type II redistribution, the occupational environment is a significant factor shaping the personalities of incumbents. It should be noted that there is a well established research tradition in sociology that focuses on the impact of job conditions on personality. This is referred to as the "occupational socialization hypothesis" (Mortimer and Lorence, 1979; see Frese, 1982, for a similar perspective from psychology). Type II redistribution thus affords another possibility for integrating the Holland theory with
sociological research. In this instance, it could be argued that a phenomenon of some importance to sociology, the occupational shaping of personality, is more likely to occur when personalities are initially undifferentiated. If this is indeed the case, then the distribution of personalities should alter in the direction of the distribution of occupations.

While operating in its own right to generate a tendency towards isomorphism, type II redistribution can also be combined with the types produce types thesis to specify a third process of redistribution. Type III redistribution carries the personality shaping effect of occupations across generations when fathers transmit their acquired personality orientations to their offspring. Again, this form of redistribution in effect combines elements of the Holland theory with the aforementioned linkage hypothesis. Some variants of the linkage hypothesis (e.g., Lueptow et al., 1979; Mortimer and Kumka, 1982) posit that paternal occupation shapes paternal personality which in turn shapes filial personality. Here, the argument is that such a process is more likely when the paternal personality is initially undifferentiated and hence more receptive to shaping by occupational environment.

The above ideas can now be drawn together. Incongruent people produce offspring with undifferentiated personality patterns. When these offspring mature, they are subject to personality shaping by their occupational environments (type II redistribution). The personality traits thus acquired are then in turn transmitted to the next generation of offspring (type III redistribution). Over time, these processes should operate to reduce the relative frequency of personalities that are subject to structural incongruence.
Types II and III redistribution can also be illustrated with the same imaginary society previously used to exemplify type I redistribution. Once again, numbers of I, A and S people have to take R, C or E jobs and hence are incongruent. These people will tend to produce offspring with undifferentiated personalities. When these offspring mature and enter occupations, they are subject to an occupational socialization effect and tend to become R, C or E types. The type orientations thus acquired are then transmitted to their own offspring. This process will result in a decline in the relative frequency of I, A and S types and an increase in the relative frequency of R, C and E personality types.

Theoretical Speculations

Some speculations using the arguments developed above are worth considering here. It will be recalled that a case can be made that changes may occur in the relative frequency distribution of occupation types in a relatively short period of time. It is also the case that the redistribution mechanisms specified above in each case require two or even three generations to produce a tendency towards isomorphism. Therefore, it might also be the case that isomorphism will be ever elusive. The rates of change that are characteristic of the relative frequency distributions of personalities and occupations may be so different so as to preclude the attainment of isomorphism.

If isomorphism is difficult or even impossible to attain, then it is interesting to consider the possible advantages that low differentiation may have for both the individual and the social system. Within the received version of the Holland theory, low differentiation tends to be viewed as at least marginally dysfunctional for the individual. This, because of the importance of differentiation as a moderator variable in the
vocational choice process; Holland (1984:30-32) believes that differentiated people will tend to make better choices and have better vocational outcomes than will undifferentiated people.

However, type II redistribution affords the possibility of viewing low differentiation in a somewhat more positive light. Under conditions where the individual might be subject to a high probability of structural incongruence, low differentiation might be quite adaptive for the individual. Consider the plight of a highly differentiated individual whose personality is subject to a high level of structural incongruence. This person may know what type of work he wants and may want it very badly but still have very little real chance of ever following his calling. Given the relationship Holland posits between congruence and satisfaction, this person would be expected to experience occupational dissatisfaction. By contrast, an undifferentiated person, though less committed or certain about a particular career orientation may, by that very fact, be more adaptable to the reality of the distribution of occupations. At the very least, this is a quite plausible argument if Holland's proposition that low differentiated people tend to achieve congruence by adapting their personalities to the environment is correct.

For the social order, it may also be more functional to have to deal with undifferentiated individuals rather than with highly differentiated but structurally incongruent people. Considering the arguments presented earlier, a case could be made that the social system is better able to assimilate undifferentiated people (through environmental shaping) than it is differentiated but incongruent people. Thus, under conditions where the relative frequency distribution of occupations changes at such a rate so as to be constantly generating structural incongruence, mechanisms which act
to generate low differentiation might have considerable adaptive value for the social order's stability.

As noted earlier, under a condition of isomorphism, cross generational personality replication would be expected to be relatively common. Consider now the implications of such replication under conditions of low isomorphism. For the personalities that are subject to structural incongruence, cross generational personality replication would often result in the perpetuation of incongruence and hence also of career dissatisfaction. Therefore, under conditions of low isomorphism, mechanisms that act to block intergenerational personality replication also act to reduce the prevalence of structural incongruence.

A recently proposed theory of cultural transmission might be useful in illustrating this argument. Cavalli-Sforza et al. (1982) delineate three lines of intergenerational trait transmission:

1. **Vertical**: transmission is from parent to child.
2. **Horizontal**: transmission is between members of the same generation.
3. **Oblique**: transmission is from non-parental members of the parental generation to the child.

In effect, it has been argued here that under a condition of isomorphism vertical transmission is relatively common and will act to perpetuate the condition of isomorphism. However, when isomorphism is low, vertical transmission of personalities subject to structural incongruence will only perpetuate incongruence and its attendant dissatisfaction. Therefore, conditions which act to block vertical transmission and promote horizontal or oblique transmission may act to reduce the prevalence of structural incongruence.
In terms of the redistribution mechanisms discussed above, the blockage of vertical transmission is involved with types I and II redistribution but not with type III. However, this is not to argue that the parent/offspring relationship is unimportant in influencing offspring's personality development. Rather, the argument here is that when parental occupation/personality incongruence exists, the nature of the parent/offspring relationship is such as to orient the offspring away from the parental personality. At this point, it is necessary to fill what up to now has been a fairly important gap in the line of reasoning which delineated the redistribution mechanisms.

In developing the redistribution mechanisms, it was posited that paternal job dissatisfaction reduces the probability that types will produce types, or alternatively, paternal job dissatisfaction tends to block vertical trait transmission. However, other than noting a suggestion by Mortimer (1974) that such might be the case, no particular rationale was offered as to why paternal job dissatisfaction should be expected to have such an effect. Arguments by McKinley (1964) and Mortimer (1974; 1975) provide the required rationale.

McKinley argued that paternal job dissatisfaction generates frustration which spills over into the parent/offspring relationship in the form of hostility and harshness during socialization. This implies that the parent/offspring relationship would not be a close one when the parent is incongruent and hence dissatisfied. Mortimer's argument nicely complements this, she argued that vertical transmission of occupational values and personality traits is facilitated by warm, close parent/child
relationships. Mortimer (1974:n17) links this argument to McKinley's; here, by simply adding parental incongruence to the sequence, the following model can be generated:

(1) Parental Incongruence (2) Parental Job Dissatisfaction

(3) Spillover From Work to Family Relationships
(4) Blockage of Vertical Transmission

(5) Redistribution

Arguments pertinent to the plausibility of this model will be presented in the next chapter. For the present, attention will be limited to exploring some of the possible implications of the above model. One implication is that under conditions of high structural incongruence, hostile or distant parent offspring relationships may be functional for both the individual and the social order. This follows from the argument presented earlier that when structural incongruence is common, conditions which act to block vertical transmission could be functional for individuals and the social system. It is interesting to carry this implication a step further. The probability of structural incongruence is a function of the degree of isomorphism between the relative frequency distributions of personalities and occupations. However, as noted earlier, such isomorphism may be quite elusive given the fact that the distribution of occupations may be subject to fairly rapid and extensive change. Combining this argument with the one just developed above, it is possible to infer that a society in which change is common is also one in which it will be quite functional for parent/offspring relationships to be weak. Such weak ties should act to block vertical transmission and hence over the long run work to reduce the prevalence of structural incongruence.
In passing, it should be noted that the blockage of vertical transmission would not be functional for personality categories that are not subject to structural incongruence. Nor would it be functional for all portions for the personality categories that are subject to structural incongruence. Some sub-sets of these categories may be in a better position to compete for the available occupational slots. For these, the blockage of vertical transmission may not be particularly advantageous. Interestingly, Mortimer (1976) has argued that a high prestige paternal occupation may promote the probability of vertical transmission. Doubtless, wealth and status help determine who shall be congruent and who not.

The final argument to be presented here is perhaps the most intriguing one of all. It was noted earlier that under conditions of high structural incongruence, low differentiation may be quite functional for the individual. It will also be recalled that one of the components of type II redistribution was that incongruent parents tend to produce undifferentiated offspring. If low differentiation is itself a trait which can be transmitted vertically, then a society which generates a lot of structural incongruence may also be one which generates a tendency for its members to become undifferentiated. This tendency would develop because incongruent parents would tend to produce undifferentiated offspring who in turn transmit the trait of low differentiation to their own offspring. Presumably such vertical transmission would be facilitated by close parent/offspring relationships. Thus, the tendency just described, could counteract the tendency of dynamic societies to evolve towards weaker family relationships that was suggested earlier.
Arguments that low differentiation may be a valuable trait under certain circumstances are likely to trouble some given the status of differentiation in the Holland theory. However, to argue that a trait or quality is adaptive or functional is not to argue that it is cost free. In the arguments presented here, low differentiation is viewed as adaptive within the context of a situation where the individual is subject to a high probability of structural incongruence. Once again, the question arises as to whether it is better to have a society of differentiated but incongruent people or one of undifferentiated people who can be molded by the prevalent occupational order.

Summary

This effectively completes the arguments that it was the intention of this chapter to formulate. One of the main goals of this chapter was to delineate a set of mechanisms which may act to generate or maintain a tendency towards isomorphism between the relative frequency distributions of occupations and personalities. This was done, but no claim is made here that the mechanisms described are the most important ones. Other mechanisms, unspecified here, may well be more important. Moreover, it is worth stressing again that a tendency towards isomorphism may not even exist. It might well be the case that the types of people and the types of work found in a society are independent distributions. It might also be the case that even if the mechanisms described above are operative, their effects are minor or overridden by other forces.

A second major goal of this chapter was to demonstrate the relevance of the Holland theory of careers to sociological inquiry. This was done through a kind of "tinker toy" sociology in which elements of the Holland theory were connected to elements of what Merton (1967) would doubtless
concede to be theories of the middle range. By doing this, the Holland theory has been shown to be at least potentially relevant to the classic sociological problem of order. Moreover, some of the arguments presented, though highly speculative at times, show that the Holland theory and sociology can inform each other to deal with issues of cultural change and personality.

The next chapter will examine some of the arguments articulated in this chapter in terms of the available research literature.
CHAPTER II

The preceding chapter formulated some arguments which attempt to connect elements of the Holland theory of careers with the sociological linkage hypothesis of intergenerational trait transmission. A model was articulated which shows how elements of the Holland theory and the linkage hypothesis can be combined to generate a tendency towards isomorphism between the relative frequency distributions of occupations and personalities. The present chapter will examine the plausibility of this model in light of the existing research literature. This examination will culminate in the formulation of some research questions that will be addressed in a subsequent chapter.

Essentially there are three main issues that will command attention in this chapter. First, the relationship between paternal personality/occupation congruence and paternal job satisfaction must be assessed. In this regard, an issue of particular interest is the determination if incongruence is a major source of occupational dissatisfaction. Second, the relationship between paternal job dissatisfaction and the quality of the father/son relationship must be assessed. Finally, the evidence relevant to the argument that the quality of the father/son relationship affects the probability of cross generational personality replication must be examined.

The Congruence/Satisfaction Relationship

In examining the relationship between congruence and satisfaction, a useful preliminary is to first determine what the Holland theory has to say about this relationship. In the 1984 statement of the theory, there are three propositions that explicitly link congruence and satisfaction:
1. Career involvement and satisfaction will be positively associated with congruence (p. 31).

2. A person's vocational satisfaction is encouraged by the congruence of his or her work environment (p. 53).

3. People find environments reinforcing and satisfying when environmental patterns resemble their personality patterns... The greater the discrepancy between people's personality patterns and environmental patterns, the more dissatisfying, uncomfortable and destructive these interactions become (p. 53).

It will be noted that while each of these statements relates congruence to satisfaction, they do not do so with the same force. Statements 1 and 2 can be lumped together as "the weak argument." The weak argument simply states that a relationship exists between congruence and satisfaction. Conceivably then, incongruence may result in lower satisfaction but perhaps not to the point that actual dissatisfaction results. By contrast, the strong argument contained in the third proposition is much more explicit about the relationship between congruence and satisfaction; incongruence does not simply lower satisfaction, it generates dissatisfaction.

Distinguishing between the weak and strong arguments is more than a technical matter. Consider for example, the implications if incongruence has only a minor impact on job dissatisfaction (i.e., the effect is statistically significant but of small magnitude). Researchers would rapidly lose interest in incongruence as a predictor of occupational behavior. Vocational counselors would also have to rethink their craft somewhat (i.e., why attempt to match personalities to jobs if a mismatch has only minor consequences?).

It should be acknowledged here that the strong argument relating incongruence to dissatisfaction need not imply that there is a strong relationship between congruence and satisfaction. While Holland argues
that congruence promotes or encourages satisfaction, the present author believes that there is enough flexibility in Holland’s treatment of this matter to justify the following argument.

It might be the case that incongruence is sufficient to generate dissatisfaction but that congruence is not sufficient to generate satisfaction (or in other words, congruence is a necessary condition of satisfaction but not a sufficient condition). In fact, it is quite easy to imagine dissatisfaction occurring even when the individual is very congruent (e.g., a person could well be dissatisfied because of pay, working conditions or hours). Moreover, it would be extremely naive to argue that congruence is the sole determinant of satisfaction. The position taken here is that the Holland theory does not imply that congruence is a sufficient condition for satisfaction. Rather, the more plausible reading is that incongruence will lead to dissatisfaction and congruence will afford the opportunity for satisfaction. Congruent people may end up dissatisfied but not because of incongruence. It would, after all, be quite surprising to find that most dissatisfaction simply stemmed from incongruence. If this argument is correct, then incongruence may be a good predictor of dissatisfaction while congruence may be only a modest or even a relatively poor predictor of satisfaction. This implies that the relationship between congruence scores and satisfaction scores is not a linear one.

In an exhaustive review of the research on the relationship between congruence and satisfaction, G. Gottfredson (1978) concluded that some fifty years of research had yielded rather sparse results. Most of the studies reviewed by Gottfredson found only weak or mixed results. A more recent review by Spokane (1985) is restricted to studies that were direct
or indirect tests of the Holland theory's postulated congruence/satisfaction relationship and which were reported in the period from 1959 to 1983. Spokane views the general thrust of the research to be supportive of the theory's predictions but he also notes that some findings have been mixed or negative.

The present review will focus on direct tests of the congruence/job satisfaction relationship which use Holland's RIASEC classification to classify occupations and personalities. Chronologically, the review will cover the period from 1978 to 1985. With few exceptions (reviewed by Gottfredson) most of the tests of the congruence/job satisfaction relationship have been reported during this period. The issue continues to generate research interest and a number of studies have appeared since Spokane's 1983 cutoff for inclusion in his review.

A summary of the congruence/job satisfaction research is presented in Table 2. Most of the studies report findings that are supportive of Holland's theory but there are exceptions. The total number of studies is not large but the research is characterized by considerable diversity of measures and classification instruments. Few of the studies use the same instruments to classify personalities or to assess job satisfaction. The studies also differ on the procedures used to determine personality/occupation congruence. Some studies use only high point codes (i.e., types) to determine congruence while others assess pattern congruence. Even when pattern comparisons are used, the measures of congruence vary from study to study. The studies also differ in terms of the homogeneity of heterogeneity of the occupations included in their samples; some studies include only a single occupation while others include several occupations.
Mount and Muchinsky (1978) present one of the few instances of an attempt to relate congruence to particular facets of job satisfaction. The measure of job satisfaction used in this study was the Job Description Index (JDI) (Smith, Kendall and Hulin, 1969). The JDI consists of five scales each of which addresses a particular facet of job satisfaction: work, supervision, promotions, pay and co-workers. A total satisfaction score was obtained by simply summing the five facet scores. Significant differences between the mean scores of congruent and incongruent groups were found for each of the facet scales and for total satisfaction.

Overall, Mount and Muchinsky conclude that congruence accounts for about 10% of the variance in overall job satisfaction. Such results indicate lower satisfaction for the incongruent but not actual dissatisfaction.

The study by Gottfredson (1981) also used the JDI but found a significant correlation only between congruence and the work (r=.27) and total satisfaction (r=.28) scales. The correlations are small in magnitude and would appear to indicate that congruence is only weakly related to work and total job satisfaction.

Studies using global satisfaction measures have also produced mixed results. Wiggins et al. (1983) and Furnham and Schaeffer (1984) assessed job satisfaction using the Job Satisfaction blank (Hoppock, 1935) and found significant satisfaction/congruence correlations of .57 and .37, respectively. Wiggins (1984) used the Task-Hygiene Job Satisfaction Blank (Wiggins, 1983) to assess satisfaction and found a congruence satisfaction correlation of .61; this is the strongest (in terms of correlation coefficient magnitude) finding reported in the studies reviewed here. Negative findings were reported by Bartling and Hood (1981) in a study
Table 2. Summary of Congruence/Satisfaction Studies

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Sample</th>
<th>Personality Measure</th>
<th>Type or Pattern</th>
<th>Satisfaction Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aranya, Barak &amp; Amerni, 1981</td>
<td>761</td>
<td>SDS(^1)</td>
<td>Type</td>
<td>Global</td>
</tr>
<tr>
<td>Bartling &amp; Hood, 1981</td>
<td>407</td>
<td>SCII(^2)</td>
<td>Pattern</td>
<td>Global</td>
</tr>
<tr>
<td>Furnham &amp; Schaeffer, 1984</td>
<td>82</td>
<td>SDS(^1)</td>
<td>Pattern</td>
<td>Global</td>
</tr>
<tr>
<td>G. Gottfredson 1981</td>
<td>113</td>
<td>VPI(^3)</td>
<td>NA</td>
<td>Facet(^4)</td>
</tr>
<tr>
<td>Melamed &amp; Meid, 1981</td>
<td>240</td>
<td>VPI(^3)</td>
<td>Pattern</td>
<td>Global</td>
</tr>
<tr>
<td>Mount &amp; Muchinsky, 1978</td>
<td>362</td>
<td>SDS(^1)</td>
<td>Type</td>
<td>Global</td>
</tr>
<tr>
<td>Swaney &amp; Prediger, 1985</td>
<td>1688</td>
<td>VPI(^3)</td>
<td>Pattern</td>
<td>Intrinsic Satisfaction</td>
</tr>
<tr>
<td>Wiggins, Lederer, Salkone &amp; Rys 1983</td>
<td>247</td>
<td>VPI(^3)</td>
<td>Pattern</td>
<td>Global</td>
</tr>
<tr>
<td>Wiggings, 1984</td>
<td>123</td>
<td>VPI(^3)</td>
<td>Pattern</td>
<td>Global</td>
</tr>
</tbody>
</table>

\(^1\)Self Directed Search (Holland 1977).
\(^2\)Strong Campbell Interest Inventory (Campbell, 1973)
\(^3\)Vocational Preference Inventory (Holland, 1979).
\(^4\)Facet Scales Include: Work, Promotions, Pay, Co-workers and Supervision.
<table>
<thead>
<tr>
<th>Fraction</th>
<th>Results</th>
</tr>
</thead>
</table>
| 1        | Weak Congruence/satisfaction Relationship  
           \[ r = 0.13 \ (p = 0.05) \] |
| 1        | No satisfaction differences between high and low congruence subjects. |
| 1        | Modest Congruence/satisfaction Relationship.  
           \[ r = 0.37 \ (p = 0.001) \] |
| 4        | Modest Congruence/satisfaction Relationship.  
           \[ r = 0.28 \ (p = 0.01) \] |
| 1        | Weak Congruence/satisfaction Relationship.  
           \[ r = 0.22 \ (p = 0.01) \] |
| 4        | Congruence explained 10% of satisfaction variance. |
| nsic     | Congruent subjects more likely than incongruent to have high satisfaction. |
| 1        | Moderate Congruence/satisfaction Relationship.  
           \[ r = 0.57 \ (p = 0.001) \] |
| 1        | Moderate Congruence/satisfaction Relationship.  
           \[ r = 0.61 \ (p = 0.001) \] |
using a seven level measure of occupational satisfaction.

The Bartling and Hood study is particularly interesting because it is one of the small number of studies which were longitudinal in design. Subjects' job satisfaction was assessed eleven years after the initial classification of subjects' personalities. It should be noted that this study assessed personality/occupation pattern congruence and used a rather stringent comparison criterion; only the satisfaction scores of subjects with fairly high or high congruence and scores of subjects with low congruence were compared. Both groups indicated fairly high levels of job satisfaction. These findings appear to be particularly disturbing for the congruence hypothesis.

Another long term predictive study by Swaney and Prediger (1985) attempted to assess intrinsic job satisfaction six years after the subjects' personalities were classified. Intrinsic job satisfaction was assessed by subjects' response to a single item asking about the extent to which a person's job gave them a chance to do interesting work. Subjects responding "good" to this item were classified as satisfied; subjects responding "fair" or "poor" were classified as dissatisfied. The rationale for classifying subjects who responded "fair" as dissatisfied is not clear. Indeed, this procedure would appear to inflate the ranks of the dissatisfied. A particularly strong feature of this study is its attempt to differentiate a subsample composed of subjects with well defined vocational interests and who value work highly. The congruence/satisfaction relationship would be expected to be especially important to these subjects. The research findings indicated that congruence and satisfaction were related in both the general and the subsample. However, the findings also indicated that low congruence does
not preclude satisfaction. For the general sample, 51% of the high congruence subjects were satisfied versus 43% of the low congruence subjects; the respective figures for the sub-sample subjects are 58% and 42%.

In general, the research reviewed here appears to support the weak argument that there is a relationship between congruence and satisfaction. The strong argument (i.e., that dissatisfaction will result from incongruence) received little support. However, before leaving this matter, it may be useful to discuss some general limitations of the research, limitations which may tend to obscure the relationship between incongruence and dissatisfaction.

A first point concerns the use of types or high point codes versus patterns as units of analysis. Some studies focus solely on type congruence and ignore pattern congruence. The use of types may lead to an overestimation of incongruence. To illustrate, assume that a match between two patterns' high point codes constitutes congruence but only one possible mode of congruence. Consider the case of a personality RIE and an occupation IRE. The two patterns are quite similar and any of the extant methods of pattern comparison would rate this as a congruent situation. However, if analysis is restricted to high point codes only, the two codes would be rated as incongruent since they do not have the same high point code. Thus, type analysis may tend to misclassify cases in the direction of incongruence. Such misclassification may result in the raising of the average satisfaction score of the "incongruent" group. Some of this group would in fact be congruent and hence would be expected to have higher satisfaction scores than the true incongruents.
It should be noted that all of the studies reviewed here examined person/occupation congruence rather than person/environment congruence. This point should be stressed for two reasons. Within the Holland theory, occupations and environments are by no means the same thing; environments are clusters or collections of occupations. Also, Holland is quite explicit in referring to personality/environment congruence when discussing the congruence/satisfaction relationship (see, for example, the propositions quoted at the opening of this chapter).

Doubtless, occupation may often be a useful analytical surrogate for environment, especially if the environment is relatively homogeneous with respect to the occupations it contains. However, a simple thought experiment should serve to demonstrate the fact that there may well be a need for greater analytical precision in this matter. Imagine a woman who has the personality pattern CSA. She is employed as the only secretary (occupation code: CSA) in a genetics department. The geneticists all have personality and occupation codes of IRS. The woman's personality is congruent with her occupation, but is it congruent with her environment? If her environment is the genetics department in which she works, the answer would have to be no; she is after all, a CSA person working in an IRS environment. However, suppose the woman is a member of a friendship network of secretaries, all with the personality patterns CSA. Perhaps this informal network is the environment that should engage interest and it could now be said that the woman is congruent with her environment.

Consider yet another possibility. Suppose the secretary has the personality pattern IRS so that now her personality would be incongruent with her occupation, congruent with the departmental environment and incongruent with the informal secretarial network. Even leaving aside the
obviously very thorny problem of delineating environmental boundaries, it is still clear that the determination of congruence may not be a very simple matter.

Given the fact that occupation and environment are conceptually distinct terms in the Holland theory, there are four possible outcomes that have to be taken into account in assessing the relationship between congruence and satisfaction. These are delineated in Table 3.

(Insert Table 3)

Developing the distinction between occupation and environment effectively develops a distinction between work and co-workers. Holland is quite explicit about the environment being characterized by the kinds of people in it (see the discussion of the Environmental Assessment Technique Holland, 1984). Delineating this distinction affords an opportunity to determine if researchers really need to be concerned with all four of the outcomes described in Table 3. This can be done by examining the Holland theory to determine if it gives greater importance to work or co-workers in the congruence/satisfaction relationship.

In fact, the theory appears to stress both work and co-workers as important factors in the congruence/satisfaction relationship. Support for the importance of work is found in Holland’s discussion of the dispositions and preferred behaviors of the personality types (Holland, 1984:19-23). The importance of co-workers is also stressed implicitly or explicitly in several statements by Holland:

People find environments reinforcing and satisfying when environmental patterns resemble their personality patterns. This situation makes for stability of behavior because persons receive a great deal of reinforcement of their behavior (1984:53).
Table 3. Possible combinations of occupational and environmental congruence and incongruence

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Person/Occupation</th>
<th>Person/Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Congruent</td>
<td>Congruent</td>
</tr>
<tr>
<td>2</td>
<td>Incongruent</td>
<td>Incongruent</td>
</tr>
<tr>
<td>3</td>
<td>Congruent</td>
<td>Incongruent</td>
</tr>
<tr>
<td>4</td>
<td>Incongruent</td>
<td>Congruent</td>
</tr>
</tbody>
</table>
Each model environment reinforces a characteristic group of social behavior (1984:45).

Personality pattern determines a person's orientation and responsiveness to others...Persons with the same or closely related patterns will be attracted to one another. Conversely, people with dissimilar personality patterns will be more likely to dislike one another and come into conflict (1984:32).

It can be concluded that person/work congruence and person/co-worker congruence are both important to the congruence/satisfaction relationship. It appears that the four outcomes specified in Table 3 may well have to be taken into account when studying the congruence/satisfaction relationship.

In terms of the congruence/satisfaction research reviewed above, only two studies, Mount and Muchinsky (1978) and G. Gottfredson (1981), attempted any assessment of the co-worker factor. The results were mixed, Mount and Muchinsky found that incongruent subjects had lower co-worker satisfaction scores than did congruent subjects, Gottfredson found no relationship between congruence and co-worker satisfaction.

The discussion that has been developed here affords the possibility of integrating the Holland theory with other theories of job satisfaction. For instance, the "two factor" theory of Herzberg (Herzberg et al., 1959) develops a distinction between "hygiene" and "motivator" factors. Herzberg believes that a failure to meet hygiene needs leads to dissatisfaction and that satisfaction will only result when motivator needs are met. Within the terms of Herzberg's classification, co-worker satisfaction is a hygiene factor and work satisfaction is a motivator factor. Conceivably then, person/co-worker incongruence could be associated with dissatisfaction while person/co-worker congruence would not be associated with satisfaction unless person/work congruence was also present. In passing, it should be noted that Herzberg's theory has been often and severely criticized (Locke, 1976). Nevertheless, the theory is still used and recently Caston and
Braitto (1985) found some support for it.

The distinction that has been developed here between person/co-worker congruence and person/work congruence may also have some important implications for the choice of satisfaction measures. Gruenberg (1981) has argued that workers are often faced with a trade off between intrinsic and extrinsic factors as determinants of job satisfaction. His view is that both factors are important but that their relative importance can vary. All workers may value intrinsic satisfaction, but some are unable to realize it in their jobs. Gruenberg argues that such workers will tend to place greater weight on extrinsic factors as determinants of overall job satisfaction. In terms of the present discussion, Gruenberg's argument may mean that person/work incongruence may not lead to dissatisfaction unless the worker is unable to compensate with extrinsic factors. Thus, when the pay is good or the co-workers congenial, global satisfaction measures may tend to yield high satisfaction scores even when the worker is incongruent in the person/work sense.

Gruenberg's approach to the job satisfaction issue is grounded in Marx's (1844) famous description of work alienation:

In what does this alienation of labor consist? First that the work is external to the worker, that it is not a part of his nature, that consequently he does not fulfill himself in his work but denies himself, has a feeling of misery not of well being...His work is not voluntary but imposed forced labor. It is not the satisfaction of a need, but only a means for satisfying other needs.

Holland's concept of incongruence would appear to have some strong affinities with the concept of alienation. Indeed, incongruence would appear to be indistinguishable from what Parsons (1951) had in mind when he described "secondary alienation" as:
...a consequence of the fact that a personality with a given value-orientation pattern in his character is faced, in a specific role, with role-expectations which are uncongenial to his need-dispositions...(p. 234).

Sociologists have used the term "alienation" to refer to a number of conditions (Seeman, 1959; 1983). Of these, two, self estrangement and social isolation, would appear to be very comparable to the concepts of person/work incongruence and person/co-worker incongruence.

The self-estrangement of the worker occurs when he has to do work which provides little or no satisfaction to his inner nature or needs. This is the type of alienation that Marx appears to have had in mind in the passage quoted above. Blauner (1964) comments on the unhappy consequences of self-estrangement:

When work encourages self estrangement, it does not express the unique abilities, potentialities, or personality of the worker. Further consequences of self-estranged work may be boredom and monotony, the absence of personal growth, and a threat to a self approved occupational identity (p. 26) (Emphasis added.)

The second mode of alienation of interest here, social isolation, results from a failure of the individual to achieve or maintain integration in a social network. Such networks would include the informal work groups that have fascinated organizational theorists since the Hawthorne studies.

As noted earlier, Holland argues that people are more likely to be attracted to people whose personality patterns are similar to their own and dislike people with dissimilar patterns. Given this, person/co-worker incongruence would be expected to work against integration into informal networks. Thus, incongruence should tend to promote social isolation.

While it would be fascinating to further explore the possible conceptual connections between incongruence and alienation, this is not a task that need be attempted here. For the present discussion, the intent
was to demonstrate that incongruence may be a factor that contributes to alienation. If this argument can be accepted, then future research on the congruence hypothesis might be well advised to consider using measures of alienation in addition to (or even in place of) satisfaction measures. In addition to possibly leading to better results. Such an approach would also afford the opportunity of integrating the Holland theory with the vast sociological literature on alienation.

Research on the congruence hypothesis has uniformly treated environment and occupation as the same thing. An argument has been presented that this is not the best approach to take. By exploring the distinction between occupation and environment, it has been possible to suggest some refinements that could help clarify the understanding of the nature and consequences of different forms of incongruence. It should also be noted that the suggestions that have been offered introduce more complexity into the study of the congruency hypothesis. For example, if it is indeed the case that environment and occupation need to be distinguished, then it becomes a matter of great importance to specify the boundaries of the environment.

Another aspect of the environment that would deserve attention is its level of differentiation. There has been no attempt in the research on the congruency hypothesis to consider the possible effects of occupational or environmental differentiation (some studies did include personality differentiation as a moderator variable). This failure is rather surprising since Holland (1984:50) is quite explicit about the importance of environmental differentiation:
The differentiation of the personality or environmental patterns increases both the possibility that the hypothesized behavior in the formulations will occur and the magnitude of the hypothesized behavior.

This too introduces a lot more complexity into the congruence hypothesis, but the failure to deal with environmental or occupational differentiation may obscure the relationship between congruence and satisfaction.

It was noted earlier that the relationship between congruence and satisfaction may not be a linear one. This is a point that should be kept in mind when evaluating the research on the congruency hypothesis which utilizes a regression model. Correlation coefficients can sometimes obscure as well as illuminate. Research which stops with the finding of a significant correlation between congruence and satisfaction is at best partial discovery. There has been little attempt to determine whether or not there is some critical level of congruence below which dissatisfaction is the rule. No attempt has really been made to determine the marginal utility of increased congruence; it might be the case that after a certain point, increased congruence does not lead to increased satisfaction. The studies which come the closest to addressing these issues are those conducted by Bartling and Hood (1981) and Swaney and Prediger (1985). These studies compared high and low congruence groups in terms of satisfaction differences. Even when, as in the latter study, a difference was found, the difference does not appear to be dramatic. Both of these studies indicate that dissatisfaction is by no means an inevitable concommitant of low congruence. Future research might be well advised to pay particular attention to very incongruent subjects to determine what factors, if any, contribute to these people experiencing dissatisfaction.
A further issue to be raised here concerns some possible limitations on the generalizability of the Holland theory. The theory is offered as a general theory and the research on the congruence hypothesis has also proceeded on this presumption. However, congruence may well differ in its value to different individuals, some individuals may not even value it at all.

A distinction developed by Mark Snyder (1974; 1983) may be especially useful in developing the argument that individuals may differ dramatically in the value they place on achieving congruence. Snyder distinguishes between low self monitoring (LSM) and high self monitoring (HSM) individuals. LSMs are described as people who are especially concerned with choosing behavioral situations that allow them to be themselves. Snyder believes that LSMs will gravitate to social environments which fit their particular type of personality, they do not change their behavioral repertoire from situation to situation. In terms of the Holland theory, LSMs would be expected to place a high value on congruence and incongruence would be expected to generate dissatisfaction.

HSMs provide an interesting contrast. Snyder describes them as having "chameleon-like behavior" (1983:503). HSMs are particularly concerned with obtaining environmental cues that enable them to adapt their behavioral repertoire to the situation. Snyder (1983:503) rather nicely describes the HSM:

High self monitoring individuals ought to choose, whenever possible, to enter and to participate in social situations that possess clearly defined images of the type of person ideally suited for the situation. These images may provide script-like operating guidelines that allow high self-monitoring individuals to "become" the persons called for by their situations.

Relating this to the Holland theory, it is tempting to speculate that
HSMs may value a highly differentiated environment rather than congruence. It may be the case that HSMs tend to experience dissatisfaction when the environment is undifferentiated and ambiguous. It should also be pointed out that HSMs can be viewed as achieving congruence by adopting the traits and behavior patterns of the people in their work environment. As noted in the previous chapter, this is a congruence achieving tactic that Holland says is employed by undifferentiated people. It might be worthwhile to explore the possibility that HSMs tend to have lower levels of differentiation than do LSMs.

From a methodological point of view, HSMs may wreak havoc with predictive studies since they do not use congruence as a factor in determining whether or not to enter a situation. HSMs whose personality patterns were classified before occupational entry could end up expressing high levels of satisfaction even though their personalities appear to be incongruent with their jobs (or environments). At the very least, the concept of self monitoring appears to have the potential to be an important moderator variable in the congruence/satisfaction relationship.

A final issue to be examined here also stems from the notion that congruence may have different value for different people. The Holland theory, perhaps like most theories of work, views work as an activity which people should be able to achieve self-actualization in. Indeed, as Holland (1984:1) notes, one of the fundamental questions that his theory seeks to address is:

What personal and environmental characteristics lead to satisfying career decisions, involvement, and achievement, and what characteristics lead to indecision, dissatisfying decisions, or lack of accomplishment?
There is a value orientation here—work should be meaningful and fulfilling to the worker. However, this value orientation is a cultural product and hence subject to change. As Tighler (1927:14) succinctly put it, "to the Greeks, work was a curse and nothing else." To what extent some people still view work as a curse is arguable, but certainly it must be conceded that there is nothing really strange about a person refusing to see work as the center of his social existence. There are important consequences of such a refusal. In his analysis of the historical development of work ideologies, Anthony (1977:141) makes the telling point that:

It becomes possible to speak of man alienated by his work only when he is asked to take work seriously.

Sociologists and psychologists take work seriously and often seem to demand that workers share this enthusiasm. But, perhaps some workers don't take matters so seriously and view their work as a practical matter of existence rather than as a source of meaning and identity. In a biting commentary on the tendency of social scientists to impose their own work ideologies on others, Schorris (1981:131) comments:

The assumption that a man and his labor are of the same intellectual or cultural level is founded in the arrogance of the observer.

Schorris argues that workers tend to take an instrumental orientation to work and are correct in doing so. Anthony (1977:289) has a similar view and comments that working for money is a shocking notion only to those people who view work as a central life interest. The determination of the extent to which these views are correct is a complicated matter and is not one that really need be attempted here. Even so, it appears plausible to maintain that, in a complex and very heterogeneous culture, there is
variability in the way people view work and that some people may not view it as an area in which they want or expect to achieve self-actualization. In terms of the Holland theory, such people may be indifferent to the consequences of incongruence; their work does not provide them with a lot of satisfaction but then, they don't expect it to. Thus, individual expectations and cultural values may prove to be important moderators of the relationship between congruence and satisfaction. In terms of the existing research on the congruence/satisfaction relationship, the recent study by Swaney and Prediger (1985) comes closest to incorporating such factors. Hopefully, future research will continue to do so.

This concludes the assessment of the plausibility of congruence/satisfaction relationship. As already noted, the extant research tends to support what has been termed here as the "weak argument". There is a relationship between congruence and job satisfaction, but more research is required to determine the real case for or against the "strong argument" linking incongruence with dissatisfaction. At this point, there is no support for the strong argument. Some ideas and conceptual modifications have been suggested that may have utility for determining the empirical validity of the strong argument. In terms of the proposed model linking parental congruence to cross generational personality replication, the link between incongruence and dissatisfaction must still be viewed as undemonstrated and tentative.

Paternal Job-Dissatisfaction and Parent-Offspring Relationships

The second of the major linkages to be examined in this chapter is that between paternal job dissatisfaction and the quality of the parent/offspring relationship. As noted in the previous chapter, this connection was suggested by Mortimer (1975) and was based upon some earlier
research findings reported by McKinley (1964). The discussion here will begin with a brief review of McKinley's research and then move on to a more general examination of the various models that link job satisfaction to family interaction patterns.

McKinley argued that low socio-economic status tended to result in frustration and job dissatisfaction. Further, this dissatisfaction tended to be displaced to the family context where it resulted in harsh socialization measures and a lack of warmth in the father/son relationship. More generally, McKinley argued that, regardless of social class, there tended to be a direct relationship between paternal job dissatisfaction and the severity of socialization practices used in child-rearing. In turn severe socialization practices were thought to inhibit the son's identification with his father. McKinley's work is more suggestive than it is demonstrative. Some of his samples were quite small and his statistical analysis was rudimentary and failed to report any tests of significance.

McKinley's articulation of a link between paternal job dissatisfaction and the quality of the father/son relationship is a species of what is now generally referred to as the "spillover" model of the relationship between work and non-work. This is one of three major models that attempt to capture the nature of the work/nonwork relationship: spillover, compensation and no effect (Champoux, 1981). The major focus of attention here is on the spillover model but it is still necessary to consider, if only briefly, the no effect and compensation models. Extensive reviews of the various models and some of their permutations can be found in Voydanoff (1980); Kabanoff (1980); Near et al. (1980); Staines (1980) and Champoux (1981).
The no effect model views work and nonwork as separate spheres of action with each having little or no impact on the other. This is not a view that predominates among the researchers who have studied the work/nonwork relationship. Still, it does have its proponents, the most notable of these being Dubin (1973). This particular model, if true, would effectively terminate the present inquiry. If work dissatisfaction indeed has little or no effect outside of the work place, then the proposed model linking dissatisfaction to the quality of the parent/offspring relationship cannot be true.

The compensation model predicts that dissatisfied workers will be especially likely to seek satisfaction in their nonwork activities and relationships. In terms of parent/offspring relationships, dissatisfied workers would be expected to cultivate close relationships with their offspring as a means of countering the negative consequences of work. This could have some interesting ramifications. Earlier, it was suggested that close parent/offspring relationships may act to facilitate the intergenerational transmission of personality. If this is the case, then the compensation model would lead to the expectation that incongruent (and hence dissatisfied) people may be quite likely to transmit their personality to their offspring. This is the exact contrary to what is predicted by the model developed in the previous chapter. Thus, if the paternal incongruence is of the structural variety, then the compensation model would tend to perpetuate structural incongruence across generations. It could therefore be concluded that for a society in which structural incongruence is a problem, the compensation strategy for dealing with job dissatisfaction may be functional for the father but dysfunctional for the son. Hating his job, the incongruent father loves his son the more, but
thereby helps insure that his son's chances of incongruence increase. For the social system the compensation strategy may be functional in that it helps people deal with the effects of job dissatisfaction, but also dysfunctional because it does nothing to reduce the prevalence of structural incongruence.

The spillover model predicts that the effects of work will have effects of a similar quality on nonwork. Thus, job satisfaction should contribute to nonwork satisfactions and job dissatisfaction should have negative consequences for nonwork satisfactions. By implication then, the spillover model would lead to the expectation that incongruence would tend to generate negative consequences for behavior and relationships outside of work.

The classic spillover model is the alienation thesis of Marxism. Since it has been suggested here that it may be possible to view incongruence as alienation, it may be useful to briefly examine the alienation spillover thesis. A common interpretation of the Marxian alienation doctrine is that work alienation will inevitably have negative consequences for other areas of the worker's life. Indeed, central to the Marxian agenda for utopia is the notion that all areas of life will be improved if the conditions that generate alienation are removed. Kaufman (1965) describes this doctrine as the "principle of the sufficiency of unalienated labor." In an examination of the alienation spillover thesis, Seeman (1971:137) describes a "principal of frustration-aggression" which:...

...holds that alienated work builds frustrations that find release elsewhere (hence, the prediction, e.g., that alienated work should correlate with...punitive family relations, etc.)....
This resonates nicely with McKinley's argument on the relationship between job dissatisfaction and family relations. Champoux (1981) believes that a similar theme has been very influential in industrial and organizational psychology with much of the literature assuming that an improvement in work life will spill over to other areas of experience.

The empirical validity of the spillover thesis is still in doubt. In fact a case can be made that spillover, whether from alienation or job dissatisfaction, may not be a major source of nonwork dissatisfaction. Seeman (1975) in a major review of alienation studies, commented on the paucity of empirical studies of alienation spillover to nonwork. Seeman's (1967; 1971) own research found scant support for the spillover thesis. More recent research calls into question the importance of job satisfaction as a determinant of nonwork satisfaction. In a general review of research on the relationship between work and nonwork satisfaction, Rice, Near and Hunt (1980) report a pattern of consistent but quite modest findings. Usually the relationship accounts for only about 10% of the shared variance (Rice et al., 1985 report that this figure might be too low and that 25% shared variance might be a better estimate).

Bergermaier et al. (1984) also report findings that indicate that work may be a relatively unimportant determinant of life satisfaction (or, to use their terms, overall well being). They also interpret their data as indicating that satisfaction with the economic rewards of work is probably more important than satisfaction with intrinsic factors in determining overall life satisfaction. Chacko (1983) reports findings that are consistent with this interpretation. In testing the relative importance of intrinsic and extrinsic job satisfaction factors as determinants of life satisfaction, clear support was found only for the influence of extrinsic...
factors such as satisfaction with pay, supervision and promotions.

Over the last decade or so, there has been increasing interest in the presumed relationships between work and family. Given the centrality of the family to an individual's emotional experience, the family is an obvious area in which to look for the spillover of work dissatisfactions and stresses to occur. As noted earlier, this was McKinley's argument. Although McKinley's research does not appear to have directly stimulated much by way of attempted replication, some recent research provides at least some support for the general notion that negative work experiences may sometimes spill over into the family context (e.g. Bartolome and Evans, 1980; Jackson and Marlach, 1982). This issue is not yet resolved and some findings indicate only a weak tendency for spillover from work to the family to occur. For instance, Kopelman et al. (1983) found only weak correlations between family conflict and job satisfaction. Reviews of the research on the relationships between work and family can be found in Kanter (1977); Aldous, Osmond and Hicks (1979); Voydanoff (1980) and Greenhaus and Buetell (1985). At this point, the most reasonable conclusion is that the interrelationships between work and family are quite complex and it might even be the case that biography rather than sociology might end up yielding the greater insight into this relationship.

In terms of the validity of the proposed relationship between incongruence and the quality of the father/son relationship, no firm conclusion can yet be offered. At this point, the relationship must be viewed as still conjectural.

Before leaving this particular subject, it may be useful to explore some possibilities that may eventually prove important in clarifying the relationship (if any) between incongruence and the quality of the
father/son relationship. Each of the three major models that attempt to capture the nature of the relationship between work and nonwork, spillover, compensation and no effect may have explanatory power depending upon the contingencies of the specific occasions. As Kabanoff (1980:66) has pointed out, the relationship between work and nonwork is complex and perhaps some people spillover, others compensate and still others segment and compartmentalize their lives. This seems to be both a sensible approach and one which is supported by findings reported by Chacko (1983) and Champoux (1981) which found both spillover and compensation effects.

An interesting question is which individuals or groups are most likely to exhibit a given relationship between work and nonwork. Kabanoff suggests that highly dissatisfied workers may be the ones most likely to transfer their feelings to the nonwork context of their lives. This suggestion, in turn, leads to a consideration as to which individuals or groups are most likely to become highly dissatisfied.

One type of person who is perhaps especially vulnerable to dissatisfaction may be the person who places a high value on congruence but is unable to attain it. In examining the relationship between congruence and satisfaction, an argument was developed that people may well hold different values in regard to congruence. In the present context, this argument can be simply expended to infer that incongruent people who place a high value on congruence may be the most likely to experience spillover from work to nonwork.

The influence of worker values as modifiers of job satisfaction is an issue of some dispute still (Mortimer, 1979). Nevertheless, it is well established that not all workers care to define work as a central life interest (Dubin, 1956). Moreover, Dubin and Champoux (1977) have shown
that differences in the weight given to work as a central life interest have some impact on measured satisfaction scores. Similarly, Caston and Braito (1985) have shown that workers differ in the value they place on increased job satisfaction and that these differences impact on measured satisfaction. These studies suggest that incongruent people who place a high value on job satisfaction and/or who place a high value on work as a central life interest may constitute a population that is especially prone to experience spillover. It might also then be the case that incongruent people who do not place a high value on job satisfaction or who do not rank work highly as a central life interest may be more likely to segment work and nonwork or to compensate in the nonwork context for the lack of satisfaction or fulfillment in work.

A bit of further speculation is appropriate at this point. Karl Popper (1964:13-16) discusses some of the dilemmas posed for social scientists by what he terms the Oedipus effect:

The interactions between the scientist's pronouncements and social life almost invariable creates situations in which we have not only to consider the truth of such pronouncements, but also their actual influence on future events.

The doctrine that work is of consummate importance to life and should be a source of self actualization still resonates throughout American society. Prominent among the propagators of this doctrine are the sociologists and psychologists who have made it their business to study workers and their work. For generations now, some segments of the population have at least occasionally listened to the social scientists. It is interesting to speculate as to the extent to which the belief that work is a central life interest and must be intrinsically satisfying has spread as a result of people listening to the social scientists. Perhaps
the very act of telling people that they must achieve self actualization in their work has sown the seeds of alienation and dissatisfaction.

Research On Intergenerational Value Transmission

The third component of the model linking parental congruence to intergenerational personality replication is the relationship between the quality of the parent/offspring relationship and the probability of the son replicating paternal values or personality traits. There are actually two major components to this issue which, though conceptually distinct are also closely intertwined. These are the determination of the extent to which cross generational replication occurs and the impact that the quality of the father/son relationship has on this process.

The discussion will proceed in the following sequence. First, a brief overview of research on the intergenerational transmission of values and personality traits. Second a review of the research that has directly addressed Holland's thesis that "types product types". Lastly, the discussion will turn to a detailed examination of the sociological linkage hypothesis and in particular to the version proposed by Mortimer and Kumka (1982).

The family has long been thought to be one of the primary socialization institutions that perpetuate cultural systems from generation to generation. Even so, the literature on the vertical transmission of values and orientations yields yet another of those situation where the expectations of both common sense and theory do not appear to receive strong confirmation from research. In a recent statement on intergenerational value transmission, Kohn (1983) takes note of the persistent tendency of research in this area to find only small (0.15 to 0.25) correlations between parent and child orientations on a variety of
measures. The general paucity of conclusive findings is rather surprising given the enduring vision social scientists have of the family as a major agency of socialization and cultural transmission. Kohn argues that the research findings probably reflect reality and that there is in fact only a modest relationship between parents' and offsprings' value orientations. Several other researchers and commentators have reached essentially the same conclusion (e.g., Connell, 1972 and Smith, 1983). Years ago the English anthropologist G. Gorer (1950) succinctly expressed the then prevailing wisdom regarding cultural continuity:

...societies continue, though their personnel changes [because] the present generation of adults will be replaced in due course by the present generation of children who, as adults, will have habits very similar to their parents.

While some theorists (e.g., Boyd and Richerson, 1985) are still inclined to view vertical transmission as a factor in promoting cultural continuity, there is growing evidence that Gorer's thesis was overstated. It will be useful to keep this in mind by way of a cautionary perspective in examining the research directly relevant to the vertical transmission of vocational interests.

In the previous chapter, it was noted that Holland (1984) proposes that "types produce types" as a partial explanation of the process of personality acquisition. A number of studies have explored this thesis using the RIASEC typology. As a preliminary to examining these, it is useful to distinguish the different procedures that are used to classify individuals. Holland (1984) specifies two general categories of classification techniques: (1) those based on quantitative assessment and (2) those based on qualitative assessment. Quantitative methods use scores from interest inventories to classify people while qualitative methods
assign people on the basis of actual occupation or expressed vocational choice. Thus, it is necessary to take into account the fact that fathers and sons can be classified on the basis of (1) measured interests, (2) vocational aspirations and (3) actual occupation. This means that there are nine distinct modes of assessing father/son agreement (see Table 4). It is useful to bear these distinctions in mind when comparing the results of studies to each other.

(Insert Table 4)

Nafziger et al. (1972) is a mode 1 study that compared fathers' and sons' occupations at both the type and pattern levels. Significant results were found at both levels. For types there was father/son agreement in 51.2% of 828 cases. This study use a weighted kappa ($k_w$) as a measure of agreement and tests of significance were based on this. For the type sample of white males, $k_w = .146$ ($p < .001$); this is interpreted as indicating a rather weak relationship. This study also examined father/son pattern similarity for the Realistic category. Of the 334 sons who reported their father's occupation, 108 (30.8%) had patterns identical to their father's. In general this study indicated a weak to modest tendency for sons to follow occupations of the same type or pattern as their fathers'.

There are two mode 3 studies which assess agreement between paternal occupation and filial vocational aspiration (Grandy and Stahlman (1974) and DeWinne, Overton and Schneider (1978)). The latter was essentially a replication of the first and the two studies had a number of common features:
Table 4. Possible types of father/son comparisons

<table>
<thead>
<tr>
<th>Son’s Classification</th>
<th>Father’s Classification</th>
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<tbody>
<tr>
<td>Occupation</td>
<td>Occupation</td>
</tr>
<tr>
<td></td>
<td>Measured Interests</td>
</tr>
<tr>
<td></td>
<td>Aspiration</td>
</tr>
<tr>
<td>Occupation</td>
<td>1</td>
</tr>
<tr>
<td>Measured Interests</td>
<td>2</td>
</tr>
<tr>
<td>Aspiration</td>
<td>3</td>
</tr>
</tbody>
</table>
1. Subjects were male and female freshmen students at large public universities.
2. Analysis was at the type level.
3. Subjects’ reports were used for parents’ occupational data.

Both studies solicited occupational data for fathers and mothers and were thus able to make same gender and cross gender comparisons. In the present inquiry only the father/son comparisons are of interest. However, the cross gender and mother/daughter results will also be reviewed here since occasion will arise to correct some errors made in the interpretation of the studies’ data. The high point code comparisons of these studies are summarized in Table 5.

{Insert Table 5}

The results reported in Table 5 are the observed probabilities that a parent of a given type will have a child of the same type. For ease of reference, such a probability will henceforth be referred to as a "replication coefficient". The simple chance replication coefficient would be .167 (1 in 6). The levels of significance and the pattern of significant results differed somewhat from study to study but both studies found a significant tendency for sons to express vocational interests of the same type as their father's occupation.

These studies are vulnerable to a number of criticisms. First, it should be pointed out that the samples were restricted to college students and were thus obviously limited in generalizability. However, this is simply a redundant observation of a well known and ubiquitous problem in sociology and psychology. More specific to the present inquiry is the possibility that public universities may pose some special problems for assessing the prevalence of the intergenerational transmission of the
Table 5. Replication Coefficients reported by Grandy/Stahlman (1974) and DeWinne et al. (1978)

<table>
<thead>
<tr>
<th>Holland Type</th>
<th>Replication Coefficient&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Grandy/Stahlman</th>
<th>DeWinne et al.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>.061</td>
<td>.092</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>.740</td>
<td>.304</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>1.000</td>
<td>.458</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>.200</td>
<td>.188</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>.321</td>
<td>.277</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>.077</td>
<td>.222</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Males only sample (i.e., father/son pairs).
Realistic type orientations. Most R type occupations fall under the general rubric of blue collar jobs; relatively few R occupations are such as to require a college education (major exceptions would be some engineering and agriculture majors). Doubtless, blue collar fathers send their sons to college often enough, but probably not so their sons will aspire to blue collar jobs. In general, it is quite likely that occupational mobility in a college sample may be such as to lead to a marked attentuation of the frequency of filial replication of paternal type for the R category.

It is instructive in this context to look at the actual type frequencies reported in the two studies. In the Grandy and Stahlman study, 66% of the fathers were R but only 3% of the sons aspired to an R type occupation. The respective figures for the DeWinne et al. study were 25% and 5%. Taken at face value, such results would seem to indicate a rather dramatic decline in the relative frequency of R type people from generation to generation. However, given the nature of the samples involved in these studies, such declines are probably best viewed as sample specific.

Table 5 presents the type replication coefficients reported in the two studies. It will be immediately noticed that the replication coefficient for the R type is quite low, indeed considerably lower than what would be expected from simple chance. This has already been explained by the nature of the samples involved. It will also be noted that there is considerable variability in the magnitude of the reported replication coefficients. In part this variation is probably due to the size of the type populations involved. For instance, the Grandy and Stahlman study reports a replication coefficient of 1.00 for A fathers. Impressive, until it is considered that only two fathers were involved. The DeWinne et al. study
had 24 A fathers and reported a much lower (though still fairly high) replication coefficient. Without placing undue stress on this matter, the results of these studies do seem to suggest that it may be wise to be sensitive to the possibility that different types may have different replication coefficients.

The replication coefficients reported in Table 5 were the diagonals of the six by six matrices that compared fathers’ occupation type with sons’ aspirations type. As noted above, the type populations differed considerably in both studies. In an attempt to compensate for the effect of the type population differences, the studies used the replication coefficients as the units of analysis. The procedure used was to sum the diagonals (i.e., the replication coefficients) of the type matrices and divide the resultants by six. This yielded the average of the replication coefficients, but not, take note, the actual replication coefficient for the sample (this latter would simply be the probability of a father having a son of the same type). It is quite important to distinguish between the replication coefficient for the sample and the average of the replication coefficient for the sample and the average of the replication coefficients. The studies used the latter as the observed cumulative percentages in the Kolmogorov-Smirnov one sample test of significance. Such use of the average replication coefficient was unwarranted and led to misinterpretation of results.

The procedure of summing the replication coefficients and then using their average as a unit of analysis would be justified only if: (1) there was a rectangular distribution of types in both the sample and its universe and (2) the sample replication coefficients also held for the sample’s universe. Under such conditions, the average of the replication
coefficients would also be the sample replication coefficient and the population replication coefficient. However, in the absence of these conditions, the use of the average of the replication coefficients did nothing to reduce the sample specificity of the results. Worse, this procedure led to a situation where the researchers in effect did not analyze their data but an artifact of an unwarranted transformation that was performed on the data.

A simple thought experiment may be useful in explaining the point being made here. Imagine a sample of 99 fathers. Types R, I and A each have 32 fathers, not one of whom has a son of the same type as himself. For these types, the replication coefficients would all be zero. Types C, S and E each have one father and in each case the father has a son of the same type as himself. For these types, the replication coefficients would be 1.00. The average of the replication coefficients would be .5 (\[0 + 0 + 0 + 1 + 1 + 1 \]/6). This greatly exceeds the simple chance expectation of .167 and it could be concluded that there is a fairly strong tendency for fathers to have sons of the same type as themselves. Such a conclusion would obviously be unwarranted for a sample in which only 3% (3/99) of the fathers have sons of the same type as themselves. The example used here is an extreme one selected to illustrate a point but the procedure is exactly that used in the studies under review here.

The appropriate unit of analysis for these studies would have been the actual sample replication coefficients. These are readily determined from the data presented in the studies and are shown in Table 6. It is

(Insert Table 6)
Table 6. Actual and Reported Sample Replication Coefficients for Grandy and Stahlman (1974) and DeWinne et al. (1978)

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Actual</th>
<th>Expected</th>
<th>Reporteda</th>
<th>Actual</th>
<th>Expected</th>
<th>Reporteda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father/son</td>
<td>.281</td>
<td>.231</td>
<td>.167</td>
<td>.400</td>
<td>.256</td>
<td></td>
</tr>
<tr>
<td>Father/daughter</td>
<td>.103</td>
<td>.134</td>
<td>.167</td>
<td>.246</td>
<td>.241</td>
<td></td>
</tr>
<tr>
<td>Mother/son</td>
<td>.098</td>
<td>.142</td>
<td>.167</td>
<td>.181</td>
<td>.228</td>
<td></td>
</tr>
<tr>
<td>Mother/daughter</td>
<td>.432</td>
<td>.328</td>
<td>.167</td>
<td>.266</td>
<td>.204</td>
<td></td>
</tr>
</tbody>
</table>

aThe "Reported sample replication coefficients" are the averages of the type replication coefficients.
interesting to compare the actual replication coefficients with the average of the replication coefficients. This latter, it will be recalled, was the figure used in the studies to report the observed probability of a father having a son as the same type as himself. Using the actual sample replication coefficients, the studies can still be seen as finding a modest tendency for fathers to have sons of the same type. However, the cross gender effects found by DeWinne et al. now disappear. Moreover, when the sample replication coefficient is used, the DeWinne et al. study shows a more pronounced mother/daughter effect. Overall, the use of the actual sample replication coefficients shows the results of the two studies to be more consistent to each other than was the case when the average of the replication coefficients was used.

A final comment on these studies concerns their use of freshman samples. L. Gottfredson and Becker (1981) have demonstrated that males exhibit considerable shifting of aspirations types in their early twenties. With the samples under consideration here, this shifting may not have occurred. While aspiration type shifting may or may not have affected the aggregate results, it would certainly change the replication coefficients of some of the types. The two mode three studies reviewed here have been shown to have a number of problems which limit their utility. However, when correctly interpreted, the studies do indicate a modest tendency for parents to have offspring as the same type as themselves. Moreover, this tendency is gender bound with there being no real support for cross gender replication.

An early study by Holland (1962) was both a mode 2 and mode 5 study. In comparing fathers' occupations and sons' measured interests, Holland found a significant but modest tendency for sons to be of the same type as
their father. The strongest effect was for E sons, of whom 51% had the same type as their father. The weakest effect was for C sons, only 9% of whom replicated paternal type. The R, I and S types (A fathers were too few to include) had between 16% to 25% of the sons being of the same type as their fathers.

In the same study, Holland compared fathers' high point codes with sons' high point codes using an interest inventory. The I sons showed the highest replication rate (43.2%) with E sons a close second (40.7%). Sons of the other types had replication rates between 7.6% and 22.0%. These results indicate a modest tendency for sons to be of the same type as their fathers with the strength of the tendency differing considerably from type to type.

Another mode study is Grotevant et al. (1977). This study used the Strong Campbell Interest Inventory (Campbell, 1974) to compare parents and offsprings type scores and pattern contours. A particularly interesting feature of this study was its incorporation of a comparison of parent offspring pairs in both biological and adoptive families. The researchers interpret their findings as indicating that there is a small but significant inheritable component to interest profiles. This conclusion is based upon the finding of greater parent/offspring similarity in biological families than in adoptive families.

The findings are quite provocative. In a recent review of research on parental influence, Smith (1983) comments that the Grotevant et al. research poses a serious challenge to the received wisdom concerning the nature of parental influence on offsprings' orientation. Smith also notes that genetic explanations are rarely invoked in studies of parent/offspring similarity. This is not, however, an area of inquiry that has gone
unstudied. For example, Scarr et al. (1981) have examined personality resemblances among the family members of adoptive and biological families, they conclude that there is only a modest resemblance among biological relatives. It is also tempting to speculate that future research might increasingly turn to genetic explanations. This is an area of inquiry to which sociobiologists might be expected to be attracted to. In this connection it is worth noting that a sound sociobiological explanation for the Grotevant et al.'s findings could be based upon Trivers (1972) concept of parental investment. Investment (resource allocation) is more likely when the investor shares genes with the recipient. Therefore, fathers may be more likely to make investments such as socialization efforts in biological sons than in adoptive sons because they share genes with the former but not the latter. Thus, the Grotevant et al.’s findings may still reflect socialization rather than inheritance.

The final study to be considered here is not readily classifiable in terms of the nine comparison modes delineated earlier. Hazanovitz-Jordan (1982) did not directly compare parent/offspring orientations. However, his data can be used to infer a parent/offspring comparison. Moreover, this study is of particular interest here because it is the only one using the Holland typology that incorporates the quality of the parent/offspring relationship into its analysis. Without attempting to summarize Hazanovitz-Jordan’s rather involved and elaborate theoretical argument, note does need to be taken of his basic argument that R and I interests are characteristically masculine and S and A interests are characteristically feminine. He predicts that people who identify more closely with a father or father surrogate will tend to have higher combined R and I scores while individuals with closer identification with their mother will tend to have
higher combined S and A scores. Using a mixed gender sample of Canadian college students (65 males and 67 females), the standardized Vocational Preference Inventory (Holland, 1979) scores of subjects were found to reflect the predicted relationships. A rather interesting feature of this study was that it asked adult subjects (mean age was 29) to assess their relationships with their parents when the subjects were age three to six. This would appear to have placed some strong demands on the subjects' memories (subjects could also use their current attitudes towards parents as a response). No data was provided concerning parental interests or occupations. However, it is still possible to use this study as an indirect support for the types produce types thesis. Holland (1979) cites data that show 63% of male occupations are either I or R and 79% of female occupations are either S or A. This provides at least a fair basis from which to argue that most of the fathers of the subjects were probably I or R and most of the mothers S or A. It could then be tentatively inferred that parent/offspring identification contributes to parent/offspring type replication. It must be stressed that there is no intent here to claim anything more than suggestiveness for this interpretation of the Hazanovitz-Jordan study.

Overall, the research directly relevant to the types produce types thesis is consistent in showing a weak to modest relationship between paternal and filial types or patterns. Various studies have used different samples, instruments, and modes of assessing father/son similarity. Only one study attempted any assessment of the impact of the quality of the parent/offspring relationship. This study, while suggestive was only indirectly relevant.
Sociologists have been quite interested in studying the relationship between paternal occupation and son's values or personality traits. The major focus here will be on what has come to be called the "linkage hypothesis" and the closely allied notion of occupational inheritance. Even though the present effort will eschew the strong temptation to detour into a study of the intellectual development of research traditions, it is still useful to briefly glance at some of the intellectual antecedents of the linkage hypothesis. Much of the contemporary theory in sociology concerning the relationship of paternal occupation to son's personality is very similar in basic argument to themes developed in the culture and personality tradition of anthropology and by the Freudian social character theorists.

Anthropology has a long tradition of studying the interactions among subsistence modes, socialization practices and personality development (Bourguignon, 1973). In particular, the research of John and Beatrice Whiting (1978) has stressed the connections between subsistence modes and socialization practices. The Darwinian model of personality selection developed by LeVine (1973) is in the same general genre (i.e., parents are seen as socializing children in such a manner as to enable the children to obtain satisfaction from the environment).

A number of scholars associated with Freudian Psychoanalytical theory have been quite interested in relating economic factors (particularly capitalist economic factors) to socialization practices in the family and the personality development or value orientation of children (e.g., Fromm, 1947; Reich, 1963). This argument is nicely stated by Fromm (1947:68):
The character of the child is molded by the character of its parents in response to whom it develops. The parents and their methods of child training in turn are determined by the social structure of their culture. The average family is the "psychic agency" of society and by adjusting himself to his family the child acquires the character which later makes him adjusted to the tasks he has to perform in social life.

The early versions of the sociological linkage hypothesis had obvious affinities with the culture and personality and social character traditions. While it would be interesting and probably worthwhile to trace the lines of influence, this would be tangential to the present effort. Moreover, the linkage hypothesis itself has undergone a number of modifications and the discussion will now turn to an examination of this development.

The term "linkage theory" appears to have first been used by Straus (1971) but he was working within an already well developed theoretical perspective. During the 1950s and 1960s a number of studies attempted to link paternal position in the occupational structure to childrearing values and socialization practices (Aberle and Naegele, 1952; Miller and Swanson, 1958; Inkeles, 1960; Kohn, 1959; 1963; 1969).

Strauss argued that parents adopted socialization practices instrumental in shaping their offspring's personality to enable the offspring to cope with their adult circumstances. It should be noted that Strauss emphasized relating socialization practices to offspring's social destination rather than to parental social origin. To illustrate, Strauss argued that lower class parents who see their offspring as upwardly mobile would tend to adopt the socialization practices of the middle class. An interesting implication of this argument is that in upwardly mobile situations, parent/offspring value orientations would be expected to be different. It will be recalled from the previous discussion of the types
produce types research that upward mobility may well affect the observed
frequency of R types in college populations.

Strauss's version of the linkage hypothesis is somewhat different from
both earlier and subsequent work which placed greater emphasis on paternal
social class or occupation as a source of variation in socialization
practices. This latter view is summarized by Kohn (1972:xxxiv):

...parents train their children for the world as they themselves
experience it, and this training tends to equip the children for the
parents' station in life, and thus serve as a brake on mobility.

Kohn's work is explicitly concerned with the ways in which paternal
occupation characteristics may be agents by which class membership is
maintained across generations. In particular, he argues that middle class
fathers tend to value self direction and independence in their sons and
lower class fathers value obedience and conformity. In each case, the
socialization values are seen as reflecting paternal occupational
experience.

Some versions of the linkage hypothesis are less concerned with the
relationship of social class to socialization practices. Steinmetz (1971)
has argued that relating social class to socialization practices may tend
to obscure a relationship between occupational characteristics and child
rearing practices. She proposed relating the demand characteristics of
occupations to socialization practices. Interestingly, she viewed an early
version of the Holland taxonomy (Holland, 1959) as a potentially useful
typology of the demand characteristics of occupations. In two small scale
studies, Steinmetz (1971; 1974) attempted to relate Holland occupational
types to socialization practices. These studies may well be the only
instances of the use of the Holland taxonomy in sociological research. It
should be noted that Steinmetz's proposal to focus on the demand
characteristics of occupations did not constitute a radical shift of the linkage hypothesis. Kohn also emphasized the demand characteristics of occupations. However, Kohn viewed these as correlated with social class while Steinmetz recast the issue in terms of traits or activities which cut across social class boundaries.

The versions of the linkage hypothesis reviewed here posit a connection between the demand characteristics of paternal occupation and the socialization values or child rearing techniques of the father. Mortimer and Kumka (1982) have proposed a modification of the linkage hypothesis in which the notion of a necessary connection between paternal occupation and socialization practices is dropped. While the Mortimer and Kumka version of the linkage hypothesis has obvious affinities with the earlier versions, it is significantly different in its view of the problematic nature of the parent/offspring relationship. The transmission of the work orientations and values is viewed as contingent upon the quality of the parent/offspring relationship with warm, close relationships seen as facilitating transmission. This last point is viewed as especially significant by Mortimer and Kumka since they have argued that the failure to include an index of the quality of the father/son relationship may account for the negative results of other tests of the linkage hypothesis (e.g., Lueptow et al., 1979). In their view, paternal occupational experiences could be one of any number of factors affecting the quality of the father/son relationship. As noted previously, the present effort follows Mortimer (1974) and McKinley (1964) in suggesting that paternal job dissatisfaction may impact negatively on the father/son relationship.
Mortimer and Kumka (1982:14) comment:

...a...necessary element for a plausible linkage model is a meaningful connection between specific dimensions of parents' work and children's psychological attributes.

A major argument of the present research is that the constructs of the Holland taxonomy provide precisely such a meaningful connection. In a sense, the present effort can be viewed as picking up where Steinmetz's earlier effort left off. However, the version of the linkage hypothesis that will be used here is that proposed by Mortimer and Kumka. An argument will be offered here that the Holland taxonomy has more utility for evaluating the linkage hypothesis than the occupational classification used by Mortimer and Kumka. In order to argue this point, it is necessary to examine a series of studies by Mortimer (1974; 1975; 1976) and Mortimer and Kumka (1982) which used this classification. Collectively, these studies constitutes the most important body of recent sociological research on occupational inheritance. This is also the research which is conceptually the most germane to the present inquiry.

The series of studies of interest here were all based upon the same sample or subsample. The studies also all used the same classification for paternal occupations: a basic dichotomy between "professionals" and "businessmen". The "professional" category was divided into six occupations: doctors, lawyers, scientists employed outside of academia, teachers, college professors and dentists. "Businessmen" were classified not by occupation but on the basis of work being located in a profit making enterprise. The rationale for this was that "work in a business setting was expected to have important implications for occupations experiences and values" (Mortimer 1974:1282). Mortimer acknowledged that this classification resulted in lumping together a rather diverse series of
occupations together as "businessmen" (including some occupations generally thought of as professional). Thus, the category of "businessmen" included engineers, accountants, clerks, machinists, administrators, managers, store owners, salesmen, foremen and others. The occupations included under the general rubric of "businessmen" varied somewhat from study to study. It should also be noted that the category of "businessmen" was subdivided on the basis of self versus non-self employment and whether or not work involved working with people, data or things.

Mortimer's classification system confounds taxonomic criteria. Some occupations generally considered to be professions such as engineers and accountants were classified as "businessmen" because of the locus of employment in a profit making enterprise. But some of the "professionals" were also employed in profit making enterprises. For example the category of "scientist" was explicitly reserved for scientists working in business and research settings (Mortimer, 1974:1282). The logic of calling engineers who work in a profit making enterprise "businessmen" and calling scientists who work in the same enterprise "professionals" is rather elusive. If Mortimer wanted to use locus of employment as a taxonomy criterion, she should have been consistent in its application. Her rationale for classifying "businessmen" on the basis of locus of employment was that work in a profit making enterprise was presumed to have important implications for occupational values. In particular, Mortimer argued that "businessmen" value extrinsic rewards while "professionals" place more value on intrinsic rewards. Given Mortimer's argument on the impact of work in a profit making enterprise, it would be reasonably to expect that some of the scientists and corporate lawyers would place high value on extrinsic rewards. Moreover, it is quite legitimate to speculate as to why
self employed "professionals" such as doctors, lawyers, and dentists could not be classified as working in profit making enterprises. It is reasonably certain that such self employed professionals are not indifferent to their profit margins. If a self employed accountant is a businessman, why isn't a self employed lawyer a "businessman"?

The practice of using locus of employment as a taxonomic criterion seems to be of doubtful utility. It has already been noted that this results is a rather diverse collection of occupations being labeled as "businessmen". Inevitably, the question arises as to where the dividing lines should be drawn. For instance, should the janitors and warehouse workers of General Motors be called "businessmen" because they work in a profit making enterprise'? Or, should the secretaries, administrators and janitors of a university be labeled "scholars" because they work in a knowledge generating enterprise? In brief, the locus of employment appears to be too crude a criterion to have much utility. Moreover, this procedure easily generates confusion in a way very similar occupations are classified. For example, Mortimer classified scientists employed in academia as "college professors" while scientists employed in business or research settings were classified as "scientists" (Mortimer, 1974:1282). This implies that a chemist employed by a college has more in common with an English Literature professor than he does with a chemist employed by General Motors.

Mortimer used the classification system described above to assess intergenerational occupational inheritance. She (1974:1295) concluded that:

Examination of the distribution of student's work preferences by their father's occupations further revealed a strong tendency toward occupational inheritance. When sons did not choose their fathers'
work, there was some indication that they still sought the occupational experiences and rewards obtained by their fathers.

This conclusion is now engrained in the literature and can be found in major reviews of the relationship of work and family (e.g. Bronfenbrenner and Crouter, 1982; Schulenberg et al., 1984). However, an examination of Mortimer’s data and supporting arguments leads to a somewhat different conclusion. The actual frequency of sons who aspired to an occupation of the same category as their father’s was 15.5% (Mortimer, 1974:1291). If anything this would seem to indicate a rather weak tendency towards occupational inheritance. Mortimer’s discernment of a strong tendency towards occupational inheritance appears to be based on her analysis of selection ratios (i.e., the ratio of sons choosing their father’s occupation). For a given occupational category, a certain percentage of sons whose fathers are in that same category aspire to it and a certain percentage of the total sample of sons aspire to it. Dividing the former percentage by the latter percentage yield a ratio which when it exceeds 1.0 indicates that a disproportionate percentage of sons are choosing their father’s occupation. To illustrate, 21% of the sons of college professors aspired to be college professors while only 15.7% of the total sample of sons aspired to be college professors. Dividing 21% by 15.7% yields 1.34 which since it exceeds 1.0 indicates that a disproportionate percentage of the sons of college professors aspired to be college professors. Selection ratios exceeding 1.0 were obtained for almost all of the occupational categories but, even so, in all but one category (doctors) a majority of sons aspired to an occupation different from that of their father. The pattern of the selection ratios indicated that there was a tendency for sons to choose their father’s occupation but the inference that this was a strong tendency was simply not correct. The net affect of this tendency
was that only 15.5% of the sons aspired to their father's occupation. This net effect hardly lends itself to an interpretation of a strong tendency towards occupational inheritance.

Mortimer also argued that when sons did not choose their father's occupation, they tended to choose occupations which offered experiences and rewards similar to those of their father's occupation. This conclusion was based upon a smallest-space analysis in which paternal occupations were grouped according to the similarity of sons' occupational aspirations. The resultant clusters of paternal occupations indicate that sons tended to choose occupations within the cluster to which their father's occupation belonged. For example, the sons of doctors, dentists and scientists tended to indicate aspirations to be doctors, dentists or scientists. Therefore, the paternal occupations formed a cluster based on sons' aspirations. Mortimer then imposed interpretive axes on the pattern of clusters and concluded that sons tended to choose occupations similar to their fathers' in terms of autonomy, functional foci and rewards. This part of her analysis was also problematic.

An example indicates some of the limitations of Mortimer's interpretation of the occupational clusters. The autonomy dimension of paternal occupation was analyzed in terms of a bureaucratic/entrepreneurial axis. Doctors, dentists and scientists were located towards the entrepreneurial pole and Mortimer explained this in terms of traditional occupational autonomy for doctors and dentists and on the basis of a high need for a high level of autonomy in scientific work. College professors, businessmen, and lawyers are located more towards the bureaucratic pole and this is explained on the basis of their work in "relatively large and complex organizational settings" (Mortimer, 1974:1288). Such explanations
are unconvincing. For instance, some of the "businessmen" were self employed and probably did not work in large and complex settings. Moreover, such self employed businessmen would be expected to have a high degree of autonomy in their work. Mortimer's category of "college professor" included scientists who work in academia. This category is located more towards the bureaucratic pole because of the locus of employment in a large and complex organizational setting. At the same time, "scientists" most of whom probably worked in large and complex organizational settings were explained as located towards the entrepreneurial pole because of a presumed need for autonomy in scientific work "irrespective of the organizational setting" (Mortimer 1974:1288). Overall, Mortimer's interpretation of the pattern of occupational clusters appears to be ad hoc and impressionistic rather than grounded on empirical differences among the occupational categories.

Mortimer's basic argument that sons tend to choose occupations that are similar to their fathers' in terms of experiences and rewards in an important one and of obvious relevance to the present inquiry. However, the problems with her classification system preclude making a firm assessment as to the extent to which this occurs. Notwithstanding the criticisms that have been offered here, it is still interesting to compare Mortimer's general conclusions with those reached almost fifty years earlier by Sorokin (1927). In his classic study of social mobility, Sorokin devoted considerable attention to the issue of occupational inheritance. Of particular interest is Sorokin's argument that occupations could be grouped into what he called "affinal groups" and that offspring tended to enter occupations that had close affinities to their fathers'. In general, Sorokin concluded that there was a tendency for sons to enter
their father's occupation but also that this tendency was on the decline. If Mortimer's argument that there was a strong tendency towards occupational inheritance could be accepted, then there would appear to have been a reversal of the trend discerned by Sorokin. However, if the arguments presented here against Mortimer's interpretation are accepted, then Mortimer's data (though not her interpretation of it) would be consistent with Sorokin's argument.

Mortimer (1975; 1976) and Mortimer and Kumka (1982) used the same occupational classification as the study just reviewed. The later studies incorporated a measure of the quality of the father/son relationship in their analyses. A basic argument common to these studies was that a close father/son relationship was conducive to the son acquiring the value orientation presumed to be characteristic of the father's occupation. While a detailed study by study critique need not be presented here, some important points need to be emphasized.

First, it should be noted that collectively these studies tend to indicate a rather weak relationship between the quality of the father/son relationship and vertical transmission of occupational values. Correlation coefficients and regression coefficients were statistically significant at various levels but their magnitudes were also quite modest.

A second area of comment concerns some of the occupational characteristics that were used in these studies. A great deal of importance was assigned to presumed differences between "professionals" and "businessmen" in terms of the weight each group assigns to extrinsic and intrinsic rewards. "Businessmen" were assumed to be more oriented to extrinsic rewards and "professionals" to intrinsic rewards. In turn, the quality of the father/son relationship was expected to be differentially
associated with sons’ intrinsic and extrinsic values in "businessmen" and "professional" families. Mortimer (1975:35) was quite explicit on this last point:

...family relationships will be positively associated with professionals’ sons’ evaluations of intrinsic occupational rewards; among businessmen’s sons they will be associated with greater emphasis on the extrinsic. Because extrinsic values were not as salient for professionals, family relationships were expected to have no impact on sons’ extrinsic orientations. Similarly, it was hypothesized that the intrinsic values would be unrelated to family variables in the business group.

The logic of saying that the family relationships are unrelated to intrinsic values in the "business" group and to extrinsic values in the "professional" group is not clear. Even if the two groups differed in the relative weight assigned to each value orientation, there is no reason to have assumed that an emphasis on one value orientation precludes the other. In other words, perhaps "businessmen" do place more weight on extrinsic values, but perhaps they also place a high value on intrinsic rewards. If such were indeed the case, then there would be no particular reason why "businessmen" would not transmit intrinsic values to their sons. Likewise, "professionals" may emphasize intrinsic values but still place a high value on extrinsic rewards and also transmit these to their sons.

Mortimer failed to offer an adequate explanation as to why "businessmen" should not pass on intrinsic values and "professionals" extrinsic values. Within the context of the argument concerning vertical transmission, such differential transmission would make sense only if "businessmen" gave very low weight to intrinsic values and professionals very low weight to extrinsic values. This would be an improbable state of affairs, yet how else, for example, could the argument that family relationships are not related to "businessmen’s" sons intrinsic values be
sustained? If "businessmen" value intrinsic rewards, they should be expected to transmit this orientation to their sons. Moreover, a close father/son relationship would be expected to facilitate this transmission. The alternative would be that "businessmen" transmit intrinsic values to their sons but that the quality of the father/son relationship is not a factor influencing this transmission. However, this would negate the thesis that socialization practices such as the father/son relationship are a "crucial ingredient" (Mortimer and Kumka, 1982:7) in the transmission process. It seems to be a bit contrived to argue that close relationships are a factor in the transmission of one value orientation but not in the transmission of other, perhaps also strongly held, value orientations.

Mortimer (1975) found that the sons of both "professionals" and "businessmen" were quite similar in terms of the value they placed on extrinsic and intrinsic rewards. She views this finding as indicating that it is necessary to examine other, non-familial sources of sons' vocational value orientations. However, her findings could just as readily be interpreted as indicating that sons acquire both extrinsic and intrinsic value orientations from their fathers and that "professional" and "businessmen" fathers hold both types of value orientation.

The classification used in the research being reviewed here did not adequately deal with the possibility that the major occupational groupings of "businessmen" and "professional" may both be characterized in terms of high levels of intrinsic and extrinsic values. Moreover, fathers were presumed to emphasize extrinsic or intrinsic values on the basis of their membership in an occupational category. Even if it were the case that "businessmen" and "professionals" as groups had different mean scores in terms of extrinsic and intrinsic values, it would hardly be the case that
there was no variability within the groups. It is quite reasonable to suppose that some "professions" place a higher value on extrinsic rewards and that some "businessmen" place a higher value on intrinsic rewards.

A number of points have been raised here concerning the utility of the occupational classification and the occupational reward classification used by Mortimer. It was noted earlier that the general pattern of findings of the research reviewed here tended to support the thesis that the quality of the father/son relationship affects the vertical transmission of the values presumed to be characteristic of the father's occupation. It was also noted that the magnitude of the findings were rather small. The interesting question then arises as to the magnitude of the findings was due to a weak structural relationship or to problems with the classifications used. It might be the case that a better classification system would yield stronger results.

A final study to be briefly reviewed here is that reported by Spenner (1981). Spenner argued that the study of intergenerational role transmission should focus on what he termed the "molecular components" of occupations. This involved analyzing occupations into role requirements, role contents and characteristic rewards. Occupational dimensions were classified into status and nonstatus dimensions. In keeping with previous status mobility research (e.g., Blau and Duncan 1967; Featherman and Hauser, 1978) fairly strong support was found for intergenerational status transmission. Weaker support was found for the transmission of the non-status related dimensions of work. Spenner did not include any measures of the father/son relationship in his analysis so his research is only indirectly relevant to the present inquiry.
This concludes the examination of the third major component of the model linking parental personality/occupation congruence to the vertical transmission of personality traits and occupational value orientations. Research using the RIASEC typology to study vertical transmission has tended to find some support for Holland's types produce types thesis. This body of research contained no direct test of the influence of the quality of the father/son relationship on vertical transmission. A second line of research reviewed here was that relevant to the Mortimer and Kumka version of the linkage hypothesis. This research included the quality of the father/son relationship as a factor in vertical transmission. However, the research findings, though positive, were not strong and the classification systems used in this research were quite problematic. Overall, the third component of the model can be evaluated as having some support from research reported in the existing literature but this support is far from definitive.

Conclusion

The previous chapter developed a model which attempted to describe a set of processes and mechanisms which may act to generate a tendency towards isomorphism between the relative frequency distributions of occupations and personalities. The present chapter has reviewed the research that is most germane to assessing the empirical plausibility of the major components of the model. Some limited support was found for the empirical validity of each of the main components but this support was not unequivical. Moreover, as noted throughout the discussion, there are often problems and limitations with the existing research which mitigate the support that can be offered to the proposed model.
At this point, perhaps the best conclusion that can be drawn is that there is just enough empirical support for the model's major components to warrant maintaining the model as a research perspective. This is admittedly a judgement call, but, even so, the model is conceptually sound in terms of the Holland theory and the other perspectives that have been examined. Also, the model has a certain merit in that it explicitly connects concepts and propositions across disciplines and research perspectives. Nevertheless, the final utility of a descriptive model must be its empirical validity and more research is obviously required before making a determination on this.

Ideally, the full model would be put to a test specifically designed to assess its empirical validity. This test should incorporate the suggestions that have been offered in the above review. Such a full scale test is not possible in the present effort which per force must be more modest and narrowly focused. It is proposed here to select a component of the model for empirical testing. The selection is based on the following rationale. A major goal of the present study was to attempt a demonstration that the Holland theory and sociology have utility for each other. The general model demonstrated this utility by connecting the congruence/satisfaction relationship of the Holland theory to the sociological linkage hypothesis. By making this connection, it was possible to develop an argument showing how a tendency towards isomorphism between the relative frequency distributions of occupations and personalities may be maintained. A tendency towards such isomorphism was also shown to be relevant to both the Holland theory and the classic sociological problem of order. In terms of the individual components of the general model, the linkage hypothesis affords the best opportunity to
use the Holland taxonomy in sociological research. The vertical transmission of occupational values and personality traits is a matter of substantive interest in both the Holland theory and sociology. The Mortimer and Kumka version of the linkage hypothesis stresses the need to include measures of the father/son relationship in the study of vertical transmission. Thus, the quality of the father/son relationship should be an important moderator variable for Holland's types produce types thesis. Occasion has arisen here to criticize the shortcomings of the occupational classification used in the research relevant to the Mortimer and Kumka version of the linkage hypothesis. The suggestion was offered that the Holland taxonomy should be a more useful classification for investigating the linkage hypothesis. This suggestion will now be followed up on and the focus of the present effort will now shift to an empirical investigation of the Mortimer and Kumka linkage hypothesis using the Holland taxonomy. Essentially, this research will address the question of the impact of the quality of the father/son relationship on the vertical transmission of occupational value orientations. This research holds interest for both the Holland theory and occupational sociology. Moreover, the research will be an empirical test of the model connecting the Holland theory to the linkage hypothesis. The research thus not only addresses an issue of interest to the two research traditions but also provides a link between the two traditions.
CHAPTER III

This chapter is methodological in focus. In the preceding chapter it was argued that the Holland taxonomy may have utility for examining the Mortimer and Kumka version of the linkage hypothesis. This chapter will formalize and specify the methodological procedures relevant to such an examination.

Types Versus Patterns

The first issue here concerns the use of types (i.e., high point or first letter codes) versus patterns as units of analysis. As noted in the first chapter, both types and patterns have been widely used in research. It was also noted that the use of types rather than patterns may, in some instances, have affected the interpretation of research results. While type level analysis certainly has its uses, it also comes close to oversimplification. When analysis is conducted at the type level it is altogether too easy to lose the flexibility of which the Holland taxonomy is capable. It should also be emphasized that the Holland taxonomy does not really attempt to classify people or jobs as one of six types. Rather, the taxonomy consists of six types which can be used as parameters to classify people or jobs. Holland (1984:3) is quite explicit on this point:

A six category scheme built on the assumption that there are only six kinds of people in the world is unacceptable on the strength of common sense alone. But a six category scheme that allows a simple ordering of a person’s resemblance to each of the six models provides the possibility of 720 different personality patterns...

The present analysis then, will continue at the pattern level. It will, however, restrict analysis to the level of three letter pattern codes; a restriction still allowing for 120 discrete patterns.
Assessing Congruence

A number of techniques have been developed for assessing the level of congruence between two patterns. Four such techniques are reviewed here:

1. The Zener-Schnuelle Index (Holland, 1979)
2. The Kwak-Pulvino Mathematical Model (Kwak and Pulvino, 1981)
3. The Iachan Index (Iachan, 1984)

The Zener-Schnuelle Index is a seven rank classification system. Unfortunately, the scoring protocols for this system do not specify all possible outcomes and as Iachan (1984a) has pointed out, this procedure does not adequately differentiate among outcomes.

The Kwak-Pulvino Mathematical Model is an interesting development because it incorporates the correlations among types into the measurement of the similarity between patterns. It will be recalled that the six Holland types are more or less correlated to each other with the degree of correlation being approximated by a hexagon. The Mathematical Model weights the correlations between a pair of elements according to the relative position the elements occupy in their respective patterns. Elements in the first position receive a 4; elements in the second and third positions receive weights of 2 and 1 respectively. An index of agreement (X) can then be calculated as:

\[ X = \frac{4r_{11} + 2r_{22} + r_{33}}{7} \]

where \( r_{11} \) indicates the correlation between the elements that occupy the first position in their respective codes and so on.
Iachan (1984 a) has discussed the shortcomings of this procedure. In particular, he notes that this technique requires that the type pair correlations would have to be obtained for each sub-population of immediate research interest. This makes the technique cumbersome in application. It would also be difficult to compare codes across populations if the correlations among the six types were significantly different in the populations of interest.

The technique proposed by Iachan is of particular interest here since a modification of his proposed measure will be used in the present inquiry. A formal explication of the Iachan Index can be found in Iachan (1984a; b). What follows here is a practical or working description of the technique. Basically Iachan's procedure can be seen as involving two major steps: (1) the specification of the possible classes of agreement between two patterns and (2) the ranking of those classes. Since there are 120 discrete three letter patterns, for any given pattern there are 120 possible comparisons. However, these can be grouped into a smaller number of classes. For example, consider the pattern RIA. Among the 120 patterns that can be compared with this are the patterns RIS, RIC and RIE. These codes have in common with RIA and each other the same first and second elements. The comparisons in this example could thus be seen as constituting a class of which membership is determined by having both patterns of a given comparison having R and I in the first and second positions respectively of a pattern. More generally, these comparisons could be viewed as instances of a class of comparisons whose members have common elements in the first and second position of the patterns being compared. Note that the classes of interest here are classes of comparisons between patterns rather than classes of patterns. To illustrate, a comparison between the patterns RIA
and RIS can be viewed as an instance of the class of comparisons formed by pairs of patterns which have common elements in their first and second positions.

For the 120 possible three letter patterns, Iachan has identified 24 comparison classes. That is to say, for any given pattern, there are 24 discrete classes of comparison. The understanding of this will be facilitated if the discussion here is initially restricted to a consideration of the simple case where two patterns have only a single element in common. Using Iachan's notation, any single element comparison can be described as \( W_{ij} \) where \( i \) denotes the position of an element in code A and \( j \) denotes the position of that element in code B. Since a pattern contains three positions, \( i \) and \( j \) may each be 1, 2 or 3. Thus, for the simple case of two patterns with a single common element, the following classes of agreement can be denoted:

- \( W_{11} \) Both codes have the same first letter.
- \( W_{12} \) The first letter of code A matches the second letter of code B.
- \( W_{21} \) The second letter of code A matches the first letter of code B.
- \( W_{22} \) Both codes have the same second letter.
- \( W_{13} \) The first letter of code A is the third letter of code B.
- \( W_{31} \) The third letter of code A is the first letter of code B.
- \( W_{23} \) The second letter of code A is the third letter of code B.
- \( W_{32} \) The third letter of code A is the second letter of code B.
- \( W_{33} \) The third letter of both codes is the same.
The above can be condensed somewhat since there are three pairs of equivalents: $W_{12}$ and $W_{21}$, $W_{23}$ and $W_{32}$, $W_{13}$ and $W_{31}$. Thus, for any element that is common to two patterns, there are the following classes of agreement:

- $W_{11}$ Both codes have the same first letter.
- $W_{12}$ The first letter of one code is the second letter of the other code.
- $W_{22}$ Both codes have the same second letter.
- $W_{13}$ The first letter of one code is the third letter of the other code.
- $W_{23}$ The second letter of one code is the third letter of the other code.
- $W_{33}$ Both codes have the same third letter.

The above may be thought of as a set of basic weights. In cases where patterns have more than one element in common, comparison classes can be simply described as combinations of the basic weights. For example, the patterns RIA and RCA can be described as forming a $W_{11} + W_{33}$ comparison; each pattern has a common element in the first and third positions. Using this additive technique, Iachan denotes twenty-four comparison classes. These are listed in Table 7 under the column labeled "class."

{Insert Table 7}

The additive technique developed by Iachan is a simple and elegant procedure for describing the possible classes of agreement that may exist among the 120 three letter Holland patterns. Moreover, the notation used by Iachan, which shall also be followed here, is a more succinct and useful mode of describing classes of agreement than are verbal descriptions.
Table 7. Outcomes of Pattern Comparison Procedures

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Class</th>
<th>M1&lt;sup&gt;a&lt;/sup&gt;</th>
<th>M2&lt;sup&gt;b&lt;/sup&gt;</th>
<th>CI&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$W_{11} + W_{22} + W_{33}$</td>
<td>28</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>$W_{11} + W_{22}$</td>
<td>27</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>$W_{11} + 2W_{23}$</td>
<td>26</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>$W_{11} + W_{23}$</td>
<td>24</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>$W_{11} + W_{33}$</td>
<td>23</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>$W_{11}$</td>
<td>22</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>$W_{33} + 2W_{12}$</td>
<td>21</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>$2W_{12}$</td>
<td>20</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>$W_{12} + W_{23} + W_{13}$</td>
<td>16</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>$W_{12} + W_{13}$</td>
<td>14</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>$W_{22} + 2W_{13}$</td>
<td>13</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>$W_{12} + W_{23}$</td>
<td>12</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>$W_{12} + W_{33}$</td>
<td>11</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>$W_{12}$</td>
<td>10</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

<sup>a</sup> Iachan Index scores (Iachan 1984a; b).
<sup>b</sup> Modified Iachan Index scores.
<sup>c</sup> Compatibility Index scores (Wiggins and Moody, 1983).
Table 7. (continued)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Class</th>
<th>$M_1^a$</th>
<th>$M_2^b$</th>
<th>$C_1^c$</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>$W_{22} + W_{13}$</td>
<td>9</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>$2W_{13}$</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>$W_{13} + W_{23}$</td>
<td>6</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>$W_{22} + W_{33}$</td>
<td>6</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>$W_{22}$</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>$W_{13}$</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>$2W_{23}$</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>$W_{23}$</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>23</td>
<td>$W_{33}$</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>$W_{00}$</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Another feature of the Iachan Index is the procedure used to rank order the classes of agreement. Iachan does this by assigning values to the basic weights. Since all the classes of agreement are combinations of the basic weights, it is then possible to rank order all of the classes of agreement. In assigning values to the set of basic weights, Iachan adopts the following weighting assumption:

\[ W_{11} \geq W_{12} \geq W_{22} \geq W_{13} \geq W_{23} \geq W_{33} \]

Where \( W_{11} = 22 \), \( W_{12} = 10 \), \( W_{22} = 4 \), \( W_{13} = 3 \), \( W_{23} = 2 \), \( W_{33} = 1 \).

By using the above assumption, the comparison classes are each assigned a score which is then used to rank order the comparison classes. For example, consider the patterns RIA, RSC and SRA. RIA and RSC have a \( W_{11} \) comparison with a score of 22. RSC and SRA have a \( 2W_{12} \) comparison with a score of 20 (i.e., \( 2 \times 10 \)). Thus, \( W_{11} \) ranks higher than \( 2W_{12} \). This in effect says that patterns in a \( W_{11} \) comparison are more congruent or similar to each other than are patterns in a \( 2W_{12} \) comparison. Using this additive procedure, the classes are ranked by their scores. The resultant hierarchy is listed in Table 7 under the M1 column. A hierarchy of 22 ranks with scores ranging from 0 to 28 is generating by using the Iachan technique with the original weighting assumption. A different rank is generated for almost all of the twenty four classes of agreement, there being only two pairs of ties (note outcomes 17, 18 and 20, 21 in Table 7). The technique is simple in execution and appears to be a rather nice solution to the problem of comparing patterns.

An argument will now be presented that it is desirable to develop a different weighting assumption than that used in the original version of the Iachan Index. Consider the basic weight \( W_{11} \) with its assigned score of 22. This score is analytically justified because it is the minimum score
needed to maximally differentiate (in terms of relative rank) among the comparison classes. If a score lower than 22 is assigned to \( W_{11} \) then the resultant hierarchy will have more ties. For example, if \( W_{11} = 20 \), then it would be the case that \( W_{11} = 2W_{12} \). However, in assigning such a high score to \( W_{11} \) it is also the case that undue weight is placed on the high point code of a pattern. This point becomes clear when the basic weights \( W_{11} (M_1 = 22) \), \( W_{22} (M_1 = 5) \) and \( W_{33} (M_1 = 1) \) are considered. The scores assigned to these reflect the relative importance of element positions in a pattern. However, this particular choice of weights also rests upon an implicit assumption that the first element of a pattern is not just the strongest element but is predominantly so. In terms of the Holland theory, Iachan's weighting assumption rests on an implicit assumption that there is a high level of differentiation in patterns.

Holland defines differentiation as the extent to which a pattern tends to resemble a single type (see Holland, 1984:5 also p. 26). Operationally, differentiation is defined as the absolute difference between the highest and lowest RIASEC scores in a pattern. It should be noted that differentiation is measured using full six code pattern. Here, working with three letter patterns, the concept is still quite germane. A pattern with low differentiation would be one in which the three elements tend to be of equal weight; a pattern with high differentiation would be one in which the first element is predominant. The scores assigned by Iachan to the basic weights \( W_{11} \), \( W_{22} \) and \( W_{33} \) clearly rest upon an assumption that the first element is predominant.

The assumption of a high degree of differentiation generates something of a paradox for the Iachan Index. If it is indeed the case that the second and third elements of a pattern are of only minor importance, then
the rationale for using pattern analysis is weakened. Thus, the paradox for the Iachan Index is that by incorporating an implicit assumption of high differentiation, it weakens the rationale for pattern analysis and hence weakens its own rationale.

An understanding of the above argument will be facilitated by examining the Class and M1 columns of Table 7. Note that outcome 6 \( W_{ij} \) has a higher M1 score than outcomes 7, 9 and 11 despite the fact that the latter all have three common elements. Such a situation makes sense only if the high point code is the predominant element of a pattern. If the other elements are at all important then patterns which have three common elements should be more similar than patterns which have only high point codes in common.

In light of the argument just presented, it seems quite desirable to develop a different weighting assumption for use with the Iachan technique. The original weighting assumption has been demonstrated to rest upon an assumption of a high level of differentiation. As such, the original version of the Iachan Index is truly descriptive only of populations of patterns that are characterized by high differentiation. For populations in which differentiation is moderate or low, a different weighting assumption that reflects lower levels of differentiation would be more appropriate.

It was noted earlier that Iachan's weights are such as to maximally distinguish the rankings of the comparison classes and that reducing the weight assigned to \( W_{11} \) must result in more ties in the ranking hierarchy. Given this, and the argument just made above, it follows that any new weighting assumption developed here will necessarily result in a smaller number of ranks than that generated by the original weighting assumption.
This is an inevitable consequence of reducing the relative and absolute score assigned to \( W_{11} \). In passing it may be noted that there is no reason whatsoever to consider raising the score assigned to \( W_{11} \). To do this would be to assume even greater differentiation and there would be no reason to move beyond type analysis.

It is now necessary to develop a criterion upon which to base a new weighting assumption for use with the Iachan technique. That criterion will be that the scores assigned to the set of basic weights should reflect the contribution of a relative position in a pattern. Since the concern here is to develop a weighting assumption useful for studying populations of patterns, the discussion must be couched in terms of the average strength or contribution of a position to a pattern. In effect, this involves making the assumption that pattern differentiation can be treated as a constant. It must be noted that this is only a simplifying assumption, without it, then it would be necessary to incorporate measures of differentiation into the comparisons of patterns. It is also necessary to note that when pattern differentiation is assumed to be constant, then it is quite important to specify the level of differentiation assumed to be characteristic of a population of patterns. Consider, for instance, the consequences of assuming differentiation to be very low. In such a case, each position would contribute equally to a pattern. Assessing the similarity of a pair of patterns would then proceed quite simply by counting the number of elements common to two patterns. The consequences of assuming a high level of differentiation have already been discussed and need not be reiterated here.
The following procedure will be used here to determine the contribution that elements in a given pattern position make, on the average, to that pattern. Let P denote position in a pattern and the subscripts 1, 2 and 3 indicate specific position. In order to facilitate comparisons between patterns, it is quite useful to express position scores as percentage contributions to the pattern. An example will be useful. On the Vocational Preference Inventory (Holland, 1979), each of the RIASEC scales has a possible score ranging from 0 to 14. The three highest scores are used to denote a three letter pattern. Thus for the set of scores:

R 8
I 6
A 4
S 10
E 0
C 2

the three highest scores S, R and I are used to form the pattern SRI. The total score for these elements (i.e., the pattern score) is 24 (i.e., 10 + 8 + 6). The contribution of each element to the pattern can now be expressed in terms of its percentage weight in the pattern score. Thus S contributes 42% (10/24), R contributes 33% (8/24) and I contributes 25% (6/24) of the pattern score.

It will be noted that the procedure just outlined utilizes the concept of differentiation. If patterns are highly differentiated, the percentage contribution of P1 elements would be high while patterns with low differentiation would be characterized by similar percentage contributions to the pattern score by each element. It must be stressed however, that
this procedure only incorporates the principle of differentiation. The procedure does not incorporate the operational definition of differentiation (the absolute difference between the highest and lowest scores for the full pattern).

The next step is to determine the average contributions of P1, P2 and P3 elements for populations of patterns. This shall be done using data from a number of small accidental samples. For each sample, the three highest RIASEC scores were used to calculate a pattern score. The percentage contribution of P1, P2 and P3 elements were then determined. The averages of these were then calculated. The results are presented in Table 8. It will be immediately noticed that the results are quite similar across samples. On the average, after rounding, the element in P1 contributes 50% of a pattern score, the element in P2 contributes 30% and the element in P3 contributes 20% of the pattern. On the average then, the relative weight of elements in P1, P2 and P3 can be expressed in terms of the ratio 5: 3: 2.

A few comments are now in order. First, the above provides a demonstration that the assumption of high differentiation that is implicit in the original Lachan weighting assumption was unrealistic. It appears that on the average, pattern differentiation tends to be moderate. The development of a new weighting assumption is therefore justified. Second, the 5: 3: 2 ratio established above can now be used as the assumed level of differentiation that it is necessary to specify for the new weighting assumption. Finally, the 5: 3: 2 ratio also provides the initial components of the new weighting assumption. Having established that on the average, P1 elements contribute 50% of a pattern score, it could then be
Table 8. Average Contribution to Pattern Score by Position

<table>
<thead>
<tr>
<th>Sample</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. College Males (n=28)</td>
<td>.48</td>
<td>.31</td>
<td>.21</td>
</tr>
<tr>
<td>B. Employed Males (n=28)</td>
<td>.53</td>
<td>.28</td>
<td>.19</td>
</tr>
<tr>
<td>C. College Females (n=31)</td>
<td>.49</td>
<td>.30</td>
<td>.21</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>.50</td>
<td>.30</td>
<td>.20</td>
</tr>
</tbody>
</table>

*Measured Interests Assessed by Vocational Preference Inventory (Holland 1979).
said that \( W_{11} \) is a comparison in which the patterns have a common element that on the average contributes 50% to each pattern. Analogous statements could be made for the comparison classes \( W_{22} \) and \( W_{33} \). Simplifying somewhat, a weight of 5 can be assigned to \( W_{11} \), 3 to \( W_{22} \) and 2 to \( W_{33} \).

The next task is to assign scores to the remaining basic weights of \( W_{12}, W_{13} \) and \( W_{23} \). There can be little argument that patterns which are characterized by a \( W_{11} \) comparison are more similar than patterns that are characterized by a \( W_{22} \) comparison. In the first instance the patterns share an element which on the average is expected to contribute 50% of a patterns score while in the second instance the common element is expected to contribute 30% of the pattern score. Matters are somewhat more problematic when it is necessary to rank \( W_{12} \) against \( W_{22} \) and \( W_{13} \) and so on.

The procedure proposed here is to group the basic weights according to the lowest position ranking incorporated in a given basic weight. In effect, this views the upper limit of the similarity of two patterns in terms of a common element as being set by the lowest position ranking of that element. Thus, the basic weights \( W_{33}, W_{23} \) and \( W_{13} \) form a group because each contains a common \( P_3 \) element. The basic weights \( W_{12} \) and \( W_{22} \) form a group because each contains a common \( P_2 \) element. This leaves \( W_{11} \) as a final group. The following weighting assumption can now be specified:

\[
W_{11} \geq W_{12} = W_{22} \geq W_{13} = W_{23} = W_{33}
\]

where \( W_{11} = 5; W_{12}, W_{22} = 3; W_{13}, W_{23}, W_{33} = 2 \)

Using this weighting assumption with the additive technique developed by Iachan, a hierarchy of ten ranks with scores ranging from 0 to 10 (there is no 1 score) is generated. The scores are assigned to the comparison classes in the M2 column of Table 7. It will be immediately noted that there are some significant differences in some of the relative rankings
generated by M1 and M2 weighting assumptions. For example, $W_{11}$ and $W_{22} + W_{33}$ have the same M2 score while there is a considerable difference in their M1 scores. Even so, M1 and M2 are highly correlated ($r = .90$). For the present research effort, the rank hierarchy generated by M2 will be used to compare patterns. The M2 scores are empirically based and incorporate a more realistic differentiation assumption than does the M1 hierarchy.

A few cautions should be noted at this point. It should be emphasized that while the M2 weighting assumption is empirically based, it still rests upon an assumption that pattern differentiation is constant within a population of patterns. It would probably be desirable to develop measurement procedures that incorporate the variability of differentiation in a population of patterns. It must also be noted that the M2 weighting assumption was developed using rather small accidental samples. It would be quite useful to determine if the 5:3:2 ratio holds for all populations and with all classification instruments. Finally, it must be stressed that the hierarchy generated by M2 only analytically distinguishes among levels of congruence. The hierarchy has not been empirically calibrated. It would be most desirable to calibrate the hierarchy in terms of its ability to capture or predict empirical outcomes. For example an M2 score of 5 is at the mid point of the hierarchy, but would such a score be associated with lower satisfaction than would a score of 10?

There is one other technique for assessing pattern congruence which should be taken into account here. This is the Compatability Index (CI) developed by Wiggins and Moody (1981). This measure has been used in research and it is necessary here to present a rationale for using M2 instead of the CI in the present research. The CI scoring protocols and
their translation into the preferred notation are listed below:

8 Codes are exact matches \((W_{11} + W_{22} + W_{33})\).

7 First elements match, second and third elements are reversed \((W_{11} + 2W_{23})\). First and second elements are the same \((W_{11} + W_{22})\).

6 Three common elements but first letters not the same \((W_{33} + 2W_{12}, W_{12} + W_{23} + W_{13}, W_{22} + 2W_{13})\).

5 First letters match, second or third letter of one code matches third letter of other code \((W_{11} + W_{23}, W_{11} + W_{33})\). First and second letters in reverse order \((2W_{12})\).

4 First and second or third letters of one code match the second and third letters of other code in any order \((W_{12} + W_{23}, W_{12} + W_{33}, W_{22} + W_{13}, W_{13} + W_{23}, 2W_{13}, W_{12} + W_{13})\). First letters match \((W_{11})\).

3 Second and third letters match or are reversed \((W_{22} + W_{33}, 2W_{23})\). First letter of one code matches second letter of other \((W_{12})\).

2 First letter of one code matches third letter of other code \((W_{13})\). Second letter of one code matches second or third letter of other code \((W_{23}, W_{22})\).

1 Third letters match \((W_{33})\).

0 No common elements \((W_{00})\).

To facilitate comparison with M1 and M2, the scores are listed in the CI column of Table 7. From the scores assigned to the basic weights, it can be readily determined that the CI incorporates the weighting assumption:

\[
W_{11} \geq W_{12} \geq W_{22} = W_{23} = W_{13} \geq W_{33}
\]

where \(W_{11} = 4; W_{12} = 3; W_{22}, W_{13}, W_{23} = 2; W_{33} = 1\).
The CI scores correlate very highly with the M2 scores \((r = .97)\). Nevertheless, the M2 hierarchy is more consistent than is the CI hierarchy. If the CI weighting assumption is used with the additive technique, a somewhat different ranking is generated than that generated by the CI scoring protocols. For example, \(W_{11}\) has a score of 4 and \(W_{23}\) a score of 2. Therefore \(W_{11} + W_{23}\) should have a score of 6. However, the CI scoring protocols assign a score of 5 to \(W_{11} + W_{23}\). Such differences can hardly be construed as major but they do indicate inconsistency in the values assigned to the basic weights in the different comparison classes.

In general then, the Iachan additive technique used with the M2 weighting assumption appears to be the best mode for assessing congruence. The M2 weighting assumption has been shown to be more realistic than the M1 weighting assumption. Moreover, with the Iachan additive technique the basic weights of the M2 weighting assumption will be consistent throughout the comparison classes. Thus, the M2 hierarchy is somewhat more consistent than the CI hierarchy.

A final feature of the M2 hierarchy to be discussed here is the extent to which a given M2 score may result from simple chance. Iachan (1984b) has determined the expected frequencies from random matchings for the comparison classes. Using these figures, the expected frequency for each rank of the M2 hierarchy is specified in Table 9.

{Insert Table 9}

The Sample

The initial sampling frame consisted of 225 male students enrolled in undergraduate sociology classes. As part of an in class survey, subjects were asked to complete a research questionnaire. Appended to this was a vocational interest inventory and a set of questions pertaining to the
Table 9. Expected Frequencies of M2 Scores\textsuperscript{a}

<table>
<thead>
<tr>
<th>M2 Score</th>
<th>Expected Frequency</th>
<th>Cumulative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>9</td>
<td>.01</td>
<td>.02</td>
</tr>
<tr>
<td>8</td>
<td>.03</td>
<td>.05</td>
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<tr>
<td>7</td>
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<td>6</td>
<td>.02</td>
<td>.175</td>
</tr>
<tr>
<td>5</td>
<td>.28</td>
<td>.45</td>
</tr>
<tr>
<td>4</td>
<td>.10</td>
<td>.55</td>
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<tr>
<td>3</td>
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<td>.70</td>
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<tr>
<td>2</td>
<td>.25</td>
<td>.95</td>
</tr>
<tr>
<td>1</td>
<td>.05</td>
<td>1.00</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Based on Iachan (1984b).
quality of subject/parent relationships and to subject's vocational aspiration.

Subjects falling into one or more of the following categories were eliminated from the research sample:

1. Subject's parents were not living together. These subjects were eliminated in an attempt to secure a sample composed of subjects who had a high likelihood of being raised by both natural parents.

2. Father's occupation was not given or not codable into Holland occupational codes.

3. Vocational interest inventory not completed. The inventory consisted of six scales of 14 items each. Each item consisted of an occupational title to which the subject responded yes or no in terms of liking that occupation. Subjects were instructed to make no response if they were unsure about an occupation. If any scale showed absolutely no responses the subject was eliminated. Conceivably a subject could be unsure about all 14 occupations on a given scale, but more likely, such a complete lack of response indicates that the subject did not attempt completion of the scale.

4. Subjects' vocational aspiration was not given, uncodable or obviously spurious (e.g., subject aspired to be God).

Using the above criteria to eliminate subjects reduced the research sample to 127 subjects. This was 56% of the original sampling frame.

A weakness of this research sample is that it contained subjects from a variety of college years. It would have been more desirable to have an all freshmen or all senior sample. An allied problem is the age distribution of the subjects. Almost 90% of the subjects were age 18 to 22
inclusive. This is an age bracket which appears to undergo a considerable amount of vocational aspiration shifting. L. Gottfredson and Becker (1981) have shown that males in this age bracket have a fairly high rate of high point code shifting. Thus, it is at least possible that the research sample may be one composed of subjects in the process of changing their aspirations.

The sample exhibited a fairly high degree of class homogeneity at least in terms of subjects' own rankings of their family's social class. Eighty five percent of the subjects described their family's social class as middle or upper middle with about equal numbers in each category. Only five subjects described their class origin as working class and only two subjects labeled their class origin as being upper class.

All of the RIASCEC types were represented in the sample in terms of sons' aspirations and interests and fathers' occupation. However, given the convenience nature of the sample, it was not possible to insure equal representation of the types. This may or may not represent a problem depending on the perspective one takes to the relative merits of type versus pattern analysis. Since the present research uses pattern analysis, the issue of possible type effects may be somewhat moot.

Given the size and nature of the sample, there are limits to the generalizability of any research findings. Nevertheless, the sample is adequate for exploratory research.

Subject Classification

Subjects were classified according to their vocational interests and occupational aspirations. Vocational interests were measured using the occupations scales of the Self-Directed-Search (Holland, 1979). These scales are similar in item content though not in presentation format to the
RIASEC scales of the Vocational Preference Inventory (Holland, 1979). Each scale consists of fourteen occupational titles to which a subject indicates a liking or disliking by a yes or no response. The positive responses are summed and a score of 0 to 14 assigned to the scale. The three highest scoring scales are then used to denote the subject's personality pattern.

Subject's vocational aspiration was assessed by the written response to the question: "What occupation do you want to have by the time you are thirty years old?" This question was taken from L. Gottfredson and Becker's (1981) research on vocational aspirations. Responses were assigned Holland occupational codes by using the Alphabetic Index to Occupational Classifications and Codes of the Self-Directed-Search (Holland, 1979). This is an index of the 500 most common occupations in the United States. In about 10% of the cases, the subject's aspiration was not listed in the index. In these cases, subjects' aspirations were assigned an occupational code by using the Dictionary of Holland Occupational Codes (Gottfredson et al., 1982).

In terms of predictive validity, aspirations have generally been found to be better than measured interests (Holland, 1984). However, of particular interest here is the fact that measured interests and aspirations can be used in tandem to define a population that is more predictable than those denied singly by either measured interests or aspirations. Bartling and Hood (1981) reported these findings in an eleven year longitudinal study. This research classified subjects by measured interests and aspirations. Congruence between the two assessments was determined by using the Zener-Schnuelle Index. High congruence was indicated by a ZS Index score of four, five or six. Low congruence was indicated by a score of zero or one. When aspiration/measured interest
congruence was ignored, 32.5% of the subjects were found to be in an occupation congruent with their measured interests. Of the subjects with aspiration/measured interest congruence, 56.2% were in occupations congruent with their measured interests and 60.4% were in occupations congruent with their aspirations. Of the group with aspiration/measured interest incongruence, only 8.6% were found to be in occupations congruent with their measured interests while 47.2% were in occupations congruent with their aspirations. These findings strongly suggest that attention should be given to stratifying samples on the basis of aspiration/measured interest congruence.

For the research here, such sample stratification was done as follows. The degree of congruence between a subject’s aspiration and measured interests was assessed using using the Iachan technique with the M2 weighting assumption. Subjects with an M2 of six or more were put in a high congruence category while subjects with an M2 score of less than six were included in a lower congruence category. The choice of a M2 score of six as a cut off was strictly on analytical grounds. From the expected frequencies for M2 scores in Table 9, it can be seen that a M2 score of six or more is expected to occur by chance for 18% of a sample. An M2 score of five or more is expected by chance 45% of the time. Thus, the M2 score of six serves as a convenient boundary. As matters worked out with the present research sample, the use of a M2 score of six for a cutoff divided the sample into almost equal groups. Sixty three of the subjects had a M2 score of six or more for their aspiration/measured interests congruence and sixty four subjects a score of less than six.
It should be noted here that a problem was encountered in assessing congruence between measured interests and occupational aspirations. Ties were fairly common between scale scores of the REASEC scales of the subjects' measured interests. For example, in 18% of the cases there were ties for the P1 position of a pattern. The procedure used here to resolve this situation was to use the best comparison between a measured interest pattern and an occupational title. This procedure results in the highest possible M2 scores. For some analyses, this procedure may not be appropriate because it distorts the chance expectation of a given M2 score. Therefore, when appropriate, the results section will also report the worst case comparisons between measured interests and occupational titles.

Father's Occupation

Subjects were requested to write down the title of their father's primary occupation. Paternal occupations were assigned Holland codes using the same procedures describe for classifying son's occupational aspirations.

Father/Son Closeness

The measure of father/son closeness was taken from Mortimer (1975). Subjects were asked to respond to the following items:

A. How close do you feel to your father?
   1. Not very close
   2. Fairly close
   3. Quite close
   4. Extremely close
B. How well do you feel your father understands you and what you want out of life?
1. Not at all
2. Not too well
3. Fairly well
4. Very well

Following Mortimer, the scores of the two items were summed with the resultant being used as a measure of the quality of the father/son relationship. The score range is 2 to 8 with 2 indicating the more distant relationship and 8 the closest relationship. Mortimer (1976) reports an average father/son relationship score of 5.69 for a sample of 1233 freshmen students. The sample in the present research has an average of 5.92 with a standard deviation of 1.37. This indicates a fairly strong tendency for father/son relations to be quite positive. In fact, only 12% of the subjects indicated scores below 5 on the combined measure. It is also necessary to note that the combined measured obscures the fact that almost all of the subjects enjoyed at least fairly close relationships with their fathers. This becomes quite evident when subjects are categorized in terms of their response to the closeness item. Only 6% of the subjects indicated that they were not very close to their fathers.
CHAPTER IV

RESULTS

The Mortimer and Kumka version of the linkage hypothesis argues that the quality of the father/son relationship is a critical component of the process of intergenerational value transmission. The previous chapter described the sample, measures and procedures relevant to a test of this hypothesis using the Holland RIASEC classification. The present chapter will report and discuss the results of such a test.

Son's Measured Interests/Aspiration Congruence

Since previous research has shown that people who have a high level of congruence between their measured interests and aspirations are the most predictable in terms of their future occupation, a preliminary analysis stratified the sample by the level of such congruence. Using the best comparison between subjects measured interest and aspiration patterns, a M2 score of six or more was used to stratify the sample. Table 10 gives the sample breakdown by M2 scores.

(Insert Table 10)

Father/Son Similarity

A series of analyses examined the general question of whether or not sons tend to have measured interests or aspirations similar to their father's occupation. Father/son similarity was assessed in three ways: (1) Son's aspiration pattern was compared to father's occupation pattern, (2) son's measured interests pattern was compared to father's occupation pattern, (3) son's aspiration type was compared to father's occupation type.
Table 10. Congruence of Sons’ Measured Interests and Aspirations

<table>
<thead>
<tr>
<th>M2 Score</th>
<th>N</th>
<th>Frequency</th>
<th>Cumulative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>9</td>
<td>.07</td>
<td>.07</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
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<td>.48</td>
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<td>5</td>
<td>45</td>
<td>.35</td>
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<td>0</td>
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<td>.02</td>
<td>1.00</td>
</tr>
<tr>
<td>Total</td>
<td>127</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Son’s Aspiration Pattern and Father’s Occupation Pattern

When son’s aspiration was compared to father’s occupation, 35% of the subjects were found to have M2 scores of six or more. The distribution of M2 scores for this comparison is given in Table 11. The chance expectation for the cumulative frequency of M2 scores of six and more is 18%. A one tailed test (α=.05) showed the observed frequency to be significantly higher than that expected by chance.

| Insert Table 11 |

Son’s aspiration patterns were also randomly paired with the occupation patterns of strangers (i.e., the fathers of other subjects). This comparison found 22% of the subjects to have an M2 score of six or more when their aspiration was compared to the occupation of a male who was not their father. A one tailed test (α=.05) showed that this observed frequency was not significantly different than that expected by chance. The mean M2 score for the son/father comparison was 5.09. For the subject/stranger comparison, the mean M2 score was 4.20. A one tailed test (α=.05) found the father/son average to be significantly higher than the subject/stranger average M2 score.

This analysis shows that there is a modest tendency for sons to have a vocational aspiration pattern that is similar to their father’s occupation. However, as indicated in Table 11 the majority (65%) of sons did not have an M2 score of six or more when their aspirations were compared to their father’s occupation. Indeed 35% of the sons have low (i.e., three or less) M2 scores. It appears that sons are just as likely to have aspirations very different from their father’s occupation as they are to have an aspiration similar to their father’s occupation.
Table 11. Similarity of Sons' Aspirations to Fathers' Occupation

<table>
<thead>
<tr>
<th>M2 Score</th>
<th>N</th>
<th>Frequency</th>
<th>Cumulative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>17</td>
<td>.13</td>
<td>.13</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
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<td>8</td>
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<td>7</td>
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<td>2</td>
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</tr>
<tr>
<td>0</td>
<td>4</td>
<td>.03</td>
<td>1.00</td>
</tr>
<tr>
<td>Total</td>
<td>127</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>
When the sample was stratified according to the level of congruence between son's aspiration and measured interests, some differences emerged. The higher congruence sons had an average M2 score of 5.6 for the comparison between their aspiration and father's occupation; the lower congruence sons had a score of 4.58. A one tailed test (a=.05) showed the difference to be significant. In terms of percentages, 43% of the higher congruence sons had an M2 score of six or more versus 26% of the lower congruence sons. For the total sample, the regression correlation coefficient between the M2 scores for son's measured interests/aspiration and son's aspiration/father's occupation was found to be .22. A one tailed test (a=.05) found this result to be significant. This analysis shows that the closer the agreement between subject's measured interests and aspiration, the more likely the subject has an aspiration similar to his father's occupation.

**Son's Measured Interests and Father's Occupation**

Table 12 shows the distribution of M2 scores when the most favorable comparison is made between son's measured interests and father's occupation. When the most favorable comparison is made, 41% of the sons have a M2 score of six or more. Since this figure is somewhat inflated because of ties in the RIASEC scales of son's measured interests, a separate analysis was performed which used the least favorable comparison. Even this more conservative analysis found 31% of the sons to have a M2 score of six or more when their measured interests were compared to their father's occupation. Using this more conservative figure, a one tailed test (a=.05) showed the observed frequency of M2 scores to be significantly greater than that expected by simple chance.
When the sample was stratified by the level of congruence between son's aspiration and measured interests, the higher congruence subsample had an average M2 score of 5.7 versus an average of 4.6 for the lower congruence subsample. In terms of percentages, 52% of the high congruence subsample had a M2 score of six or more for the comparison between son's measured interest and father's occupation versus 30% of the lower congruence subsample. Regression analysis found a correlation coefficient of .33 between the M2 scores of son's measured interests/aspiration and son's measured interests/father's occupation. A one tailed test (a=.05) showed this result to be significant.

The results of this analysis were consistent with that which examined the relationship between son's aspirations and father's occupation. There is a tendency for son's measured interests to be similar to their father's occupation and this tendency is directly through modestly related to the level of congruence between son's aspiration and measured interests.

**Son's Aspiration Type and Father's Occupation Type**

As reviewed in chapter two, Holland (1984) has proposed that types produce types and a number of studies have explored this thesis. In order to facilitate the comparison of the present research to the earlier research, an analysis was done comparing the high point codes of son's aspirations to the high point codes of father's occupation. Table 13 shows the distribution of son's aspiration type by father's occupation type. The results show that 33% of the sons have an aspiration of the same type as their father's occupation. The relatively small sample used here requires caution in interpreting the results here but some points are worth discussing. The results here would appear to be roughly comparable to the
Table 12. Similarity of Sons' Interests to Fathers' Occupation

<table>
<thead>
<tr>
<th>M2 Score</th>
<th>N</th>
<th>Frequency</th>
<th>Cumulative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
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<td>0.06</td>
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<tr>
<td>9</td>
<td>5</td>
<td>0.04</td>
<td>0.10</td>
</tr>
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<td>7</td>
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</tr>
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<td>26</td>
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<td>0.36</td>
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<td>0.41</td>
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<td>5</td>
<td>27</td>
<td>0.21</td>
<td>0.62</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
<td>0.09</td>
<td>0.71</td>
</tr>
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<td>0.77</td>
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<td>27</td>
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<td>0</td>
<td>2</td>
<td>0.02</td>
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<tr>
<td>Total</td>
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<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>
replication coefficients of 28% and 23% reported respectively by Gandy and Stahlman (1977) and DeWinne et al. (1978). In reviewing the earlier research, it was noted that R fathers have low replication coefficients. The same situation is evident in the present research which found that R fathers have a replication coefficient of .17. A speculation was offered earlier that the low replication coefficient for R fathers may be a reflection of status mobility across generations. The sons of factory workers and carpenters do not go to college to become factory workers and carpenters.

\{Insert Table 13\}

\{Insert Table 14\}

The present analysis shows that the low replication coefficient of R fathers may also be due to the use of types rather than patterns in comparing fathers and sons. Table 14 shows that when patterns (either aspiration or measured interests and occupations) are compared, the proportion of sons of R fathers judged to be similar to their fathers increases. Table 14 also provides some comparisons between E fathers and R fathers in terms of their similarity to their sons. The sons of E fathers appear to be more similar to their fathers than do the sons of R fathers. The average M2 score for similarity between son’s aspiration and father’s occupation is 6.03 for the sons of E fathers versus an average of 4.62 for the sons of R fathers. Most of the R fathers were blue collar workers or farmers while most of the E fathers were white collar workers of various kinds. Given these occupational differences, it still seems plausible to speculate that intergenerational status mobility may act to constrain the tendency for sons to aspire to occupations similar to their father’s in
Table 13. Similarity Between Sons’ and Fathers’ Types

<table>
<thead>
<tr>
<th>Sons’ Aspiration Type</th>
<th>Fathers’ Occupation Type</th>
<th>R</th>
<th>I</th>
<th>A</th>
<th>S</th>
<th>E</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>I</td>
<td></td>
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<td>9</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>A</td>
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<td>0</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>8</td>
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<tr>
<td>S</td>
<td></td>
<td>7</td>
<td>2</td>
<td>0</td>
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<td>E</td>
<td></td>
<td>14</td>
<td>5</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>C</td>
<td></td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>47</td>
<td>22</td>
<td>2</td>
<td>12</td>
<td>39</td>
<td>5</td>
<td>127</td>
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</table>
Table 14. Comparisons of Father/Son Similarity for Realistic and Enterprising Fathers

<table>
<thead>
<tr>
<th></th>
<th>Sons of Realistic Fathers (n=47)</th>
<th>Sons of Enterprising Fathers (n=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of sons</td>
<td>17%</td>
<td>56%</td>
</tr>
<tr>
<td>With the same aspiration type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>as paternal occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of sons</td>
<td>34% (X for M2=4.62)</td>
<td>44% (X for M2=6.03)</td>
</tr>
<tr>
<td>with M2 score of six or more</td>
<td></td>
<td></td>
</tr>
<tr>
<td>for comparison</td>
<td></td>
<td></td>
</tr>
<tr>
<td>between aspiration and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>paternal occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of sons</td>
<td>32% (X for M2=4.53)</td>
<td>62% (X for M2=6.26)</td>
</tr>
<tr>
<td>with M2 score of six or more</td>
<td></td>
<td></td>
</tr>
<tr>
<td>for comparison</td>
<td></td>
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<td>between interests and</td>
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<td></td>
</tr>
<tr>
<td>paternal occupation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
terms of the RIASEC patterns.

Conclusions

The results of the analyses examining the general question of father/son similarity are consistent in indicating that there is a tendency for sons to have measured interests and aspirations that are similar to their father's occupation. This tendency however is on the modest side since, for all of the comparisons, only about a third of the sons could be judged to be very similar to their fathers. The results reported here would thus appear to be quite consistent with the findings of the previous research on this question.

The Father/Son Relationship and Father/Son Similarity

The next series of analyses addressed the issue of the influence of the quality of the father/son relationship on the tendency of sons to have interests and aspirations similar to their father's occupation. The distribution of the sons' assessments of the quality of their relationship with their father is shown in Table 15. It is readily apparent that sons with high congruence between their measured interests and aspirations are very similar in terms of the quality of the father/son relationship to sons with lower congruence between measured interests and aspirations.

(Insert Table 15)

Regression analysis was used to assess the relationship between the quality of the father/son relationship and the similarity of son's measured interest and aspiration to father's occupation. The correlation coefficients for the total sample and the sub samples defined by son's level of congruence between measured interests and aspiration are reported in Table 16. The correlation coefficients are all small in magnitude and
Table 15. Son's Scores on the Quality of the Father/Son Relationship

<table>
<thead>
<tr>
<th>Father/Son Relationship</th>
<th>Total Sample (N=127)</th>
<th>High Congruence&lt;sup&gt;a&lt;/sup&gt; Sons (N=63)</th>
<th>Low Congruence Sons (N=64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>15</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>32</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>34</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>31</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Average</td>
<td>5.92</td>
<td>6.05</td>
<td>5.78</td>
</tr>
</tbody>
</table>

<sup>a</sup>High congruence sons had a M2 score of six or more for the similarity of their measured interests and aspiration. Low congruence sons had a M2 score of less than six.
none are significant at even the .05 level.

{Insert Table 16}

With the sample and subsamples used here, there does not appear to be a linear relationship between the quality of the father/son relationship and the similarity of son’s measured interests or aspiration to father’s occupation. A possible reason for the failure to detect the expected relationship may be the restriction in range of the measure of the quality of the father/son relationship. The range of the measure was 2 to 8 with a score of 5 being the mid-point. Only 12% of the subjects had scores below five while 63% of the subjects had scores above five.

The restriction in range of the quality of the father/son relationship measure becomes even more pronounced when the measure is decomposed into its constituent items. As described in the previous chapter, one of these asked the son to describe the level of closeness he felt towards his father.

{Insert Table 17}

Table 17 shows the mean $M_2$ scores for the levels of similarity between son’s aspirations and measured interests and paternal occupation for each response category of the closeness item. Only 6% of the sons describe their relationship with their father as not very close. In passing it should be noted that these subjects need not be viewed as having negative relationships with their fathers, as their response could simply indicate affective neutrality. The large majority (94%) of sons viewed their relationship with their father as being at least fairly close. As shown in Table 17, variation in the categories of closeness entails only trivial differences in the average $M_2$ scores. The small number of subjects in the
Table 16. Correlations Between Father/Son Closeness and Father/Son Similarity Comparisons

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Correlation With Closeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Sample (n=127)</td>
<td></td>
</tr>
<tr>
<td>Son’s Aspiration/Father’s Occupation</td>
<td>.104</td>
</tr>
<tr>
<td>Son’s Interests/Father’s Occupation</td>
<td>-.014</td>
</tr>
<tr>
<td>High Congruence Sons (n=63)</td>
<td></td>
</tr>
<tr>
<td>Son’s Aspiration/Father’s Occupation</td>
<td>.002</td>
</tr>
<tr>
<td>Son’s Interests/Father’s Occupation</td>
<td>.079</td>
</tr>
<tr>
<td>Lower Congruence Sons (n=64)</td>
<td></td>
</tr>
<tr>
<td>Son’s Aspiration/Father’s Occupation</td>
<td>.184</td>
</tr>
<tr>
<td>Son’s Interests/Father’s Occupation</td>
<td>-.170</td>
</tr>
</tbody>
</table>
Table 17. Son's Closeness Response and Father/Son Similarity

<table>
<thead>
<tr>
<th>Son's Closeness Response</th>
<th>N</th>
<th>Son's Interests/Father's Occupation</th>
<th>Son's Aspiration/Father's Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely Close</td>
<td>35</td>
<td>4.9</td>
<td>5.3</td>
</tr>
<tr>
<td>Quite Close</td>
<td>50</td>
<td>5.2</td>
<td>4.9</td>
</tr>
<tr>
<td>Fairly Close</td>
<td>34</td>
<td>5.2</td>
<td>5.3</td>
</tr>
<tr>
<td>Not Very Close</td>
<td>8</td>
<td>5.4</td>
<td>4.6</td>
</tr>
<tr>
<td>Total Sample</td>
<td>127</td>
<td>5.1</td>
<td>5.1</td>
</tr>
</tbody>
</table>
"not very close" cell precludes any meaningful comparison with the other cells but even so, the average M2 scores in the "not close" cell do not appear to be much different from scores in the other cells.

Discussion

The research reported here found a modest tendency for sons to have measured interests or aspirations similar to their father's occupation. No support was found for the thesis that the quality of the father/son relationship is important in producing such father/son similarity. However, given the restriction in range of the measure of the quality of the father/son relationship, the present research cannot be viewed as a good direct test of the Mortimer and Kumka argument that the quality of the father/son relationship is a critical ingredient of intergenerational value transmission. Nevertheless, it is still the case that the present research can be used to make an indirect assessment of the utility of Mortimer and Kumka's linkage thesis. Mortimer and Kumka argued that the quality of the father/son relationship is a crucial ingredient of the linkage hypothesis. But what if the large majority of son's have close relationships with their fathers? Under such a condition, the expectation should be that there would be a strong tendency for sons to have measured interests or aspirations similar to their fathers' occupations. The analyses reported here do not really lend themselves to an interpretation that there is a strong tendency for sons' interests or aspirations to be very similar to their fathers' occupations. Using an M2 score of six as a cutoff, the majority of sons were judged to be not very similar to their fathers. Moreover, substantial numbers of sons were found to be both close to their fathers and quite dissimilar to them. Thus, while the present research cannot be construed as a test of the necessity of a close father/son
relationship for father/son similarity, it is quite obvious that a close relationship is not sufficient to generate similarity.

This must all be interpreted in the context of the distribution of the scores for the quality of the father/son relationship. The sample used here found a skewed distribution with few sons judging their relationship with their father to be "not close". This distribution does not appear to be an atypical distribution. A recent study by McBroom et al. (1985) examined intergenerational value transmission using a sample quite similar to the one used here (i.e., undergraduate students enrolled in sociology classes at public universities). Their study included an item in which the subject assessed the quality of his or her relationship to their father. For 213 respondents, the average score for this item was 4.15 with a standard deviation of .90. Since the highest possible score was five, these results indicated that most of the subjects viewed their relationship with their father as positive. Mortimer and Kumka did not report any data regarding the distribution of subjects' score on their measures of the quality of the father/son relationship. However, the subsample they used was drawn from a sample which Mortimer (1976) reported as having an average score of 5.69. This is quite close to the sample average of 5.92 found in the present research using the same measure. It is thus certainly quite plausible that the Mortimer sample contained relatively few subjects who were not close to their father. Further support for the argument that most sons are close to their fathers comes from a national probability sample studied by Jennings and Niemi (1981). This surveyed male and female high school seniors in 1965 and found only 13.4% of the respondents indicating that they were not close to their fathers. In general then, it appears that relatively few sons are not close to their fathers.
In practical terms, the most important implication of the skewed distribution of closeness scores is that research on intergenerational transmission should probably focus on other variables as more important influences. This is not to say that it would not still be most desirable to test the necessity of a close father/son relationship for transmission. It would be quite interesting to examine the levels of father/son similarity in an adequate sample of sons who are distant or even hostile to their fathers. Even so, given the fact that the large majority of sons are close to their fathers, the observed variability in intergenerational transmission must be due to factors other than sons' closeness to their fathers. The interesting question now centered on why some close sons become similar to their fathers while other close sons become dissimilar.

Conclusions
Perhaps the most useful finding of the present research is that there appears to be a modest relationship between the degree of congruence between a son's measured interests and aspiration and the similarity of the son's interests or aspiration to his father's occupation. Research by Bartling and Hood (1981) had shown that interest/aspiration congruence contributes to the predictability of future occupation. The present research shows that such congruence may also define a population more likely to exhibit father/son similarity. One of the major concepts of the Holland theory is "identity" defined as a clear and stable image of goals, interests and talents (Holland, 1984:5). Some research indicates that interests/aspiration congruence may be used as a measure of identity (Holland 1984). If so, some interesting questions arise. Why should the sons who are the most predictable in terms of future occupation also be the ones most likely to be similar to their fathers? What structural or
cultural factors contribute to identity? What relationship if any, is there between paternal occupational/personality congruence and son's level of identity? The initial rationale for stratifying the sample on the basis of sons' interests/aspiration congruence was methodological. There would also appear to be some interesting theoretical issues that could be pursued. Certainly, in the research sample used here, the results suggest that identity may be a better predictor of father/son similarity than is closeness.

The fact that many sons had aspirations or interests quite dissimilar to their father's occupation may pose an interesting dilemma for the theoretical arguments that have directed the present effort. Holland (1984:32) explicitly argues that people with dissimilar personality patterns will be more likely to dislike each other and have conflict. Direct measures of paternal personality were not used in the present study. Nevertheless, if the fathers of the sons used here had high levels of congruence between their personalities and their occupations, then many of the fathers must also have personalities that are dissimilar to their sons'. Holland predicts such dissimilarity to lead to disliking but the marked tendency for the sons to have close relationships to their fathers contradicts this prediction. On the other hand, many of the sons who have personality patterns dissimilar to their father's occupation may still have personalities similar to their fathers'. In this case the father's personality and occupation would be incongruent. Therefore, it would appear that paternal personality/occupation incongruence neither inhibits a close father/son relationship nor inhibits vertical transmission. These arguments are plausible enough given the distributions of closeness scores and father/son similarity scores observed in the research sample. Still,
these arguments must remain speculative in the absence of direct measures of paternal personality.

What then of the theoretical model that was articulated in Chapter One and which provided the rationale for the research reported here? The model was an attempt to delineate a set of mechanisms which could act to generate a tendency towards isomorphism between the relative frequency distributions of personalities and occupations. Central to the model was the thesis that paternal personality/occupation incongruence contributed to the blockage of vertical transmission. It was suggested that such blockage might be the consequence of distant or hostile father/son relationships that in turn stemmed from paternal job dissatisfaction. It may still be the case that paternal incongruence leads to the blockage of vertical transmission. But, given what appears to be a general paucity of hostile father/son relationships, it would appear likely that the blockage of vertical transmission through this particular mechanism is also relatively rare. In passing it is tempting to speculate on whether or not the present research assessed the quality of the father/son relationship at the wrong point in time. Perhaps paternal incongruence is more common early on in the fathers' career and spillover into the father/son relationship more common when sons are younger. The present research examined the quality of the father/son relationship at a single point in time and a rather late point in time at that. Most of the father/son relationships had at least a twenty year history and it is certainly possible that the quality of the relationship may have fluctuated over the course of this history.

One of the general theoretical orientations here was that vertical transmission could act to preserve or generate a tendency towards isomorphism. Vertical transmission appears to be common enough, but even
so, most sons were found to have interests or aspirations that were not very similar to their fathers' occupation. It thus appears that vertical transmission, while by no means unimportant, must be only one of a number of familial or extra familial processes and mechanisms that generate isomorphism. It might even be the case that there is no tendency towards isomorphism between the relative frequency distributions of personalities and occupations. However, as argued in the opening chapter, this situation would pose some rather fundamental problems for the Holland theory and the classic sociological tradition that the role requirements of a society somehow correspond to the need dispositions of the individuals who have to perform those roles.

Have the arguments that have been developed here been worthwhile? Yes, they have. To reiterate a point already made several times, the theoretical arguments made here explicitly link concepts, propositions and research findings across disciplines. The intellectual balkanization of the various human sciences in now institutionalized and unlikely to ever be reversed. Nevertheless, it is important to build and maintain bridges among the various domains. At the very least this affords the possibility of examining various theories in a slightly different way. For example, the research results reported here suggest that Holland's concept of identity might be useful in future examinations of the sociological linkage hypothesis. In turn, it is quite plausible that the Holland theory could benefit by giving more attention to the relationship between incongruence and alienation. The arguments developed in the previous chapters have often suggested such slightly different ways of examining existing theories. Some of these suggestions may be productive and others not, but at the very least they afford some intriguing possibilities.
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