

**An Alternative Application of Holland's Theory and  
Its Implications for Career Counseling in College Settings**

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## **An Alternative Application of Holland's Theory and Its Implications for Career Counseling in College Settings**

While Holland's theory is primarily intended to assist individuals select careers in which they have the greatest likelihood of success, he indicates that the premises of the theory are equally applicable in educational settings. For example, Holland (1997) notes that "The hypotheses about educational behavior derived from the personality types resemble those for vocational behavior. The choice of, stability in, satisfaction with, and achievement in a field of training or study follow rules identical to those outlined for vocational behavior" (p. 71, emphasis added). The primary thesis of the theory is that the vocational or educational stability, satisfaction, and achievement of individuals is contingent on the congruence or fit between their personality types and their educational or work environments. This is commonly referred to as the "congruence assumption or hypothesis." While far from conclusive, there is abundant empirical evidence supporting the validity of this assumption (see, for example, Assouline & Meir, 1987; Spokane, 1985, 1996; Tranberg, Slane, & Ekeberg, 1993; Walsh & Holland, 1992).

### **Traditional Application of Holland's Theory in College Settings**

I want to focus my remarks initially on the way in which previous research has interpreted and applied the meaning of "achievement" and assessed the validity of the congruence assumption as it applies to the "achievement" of individuals in vocational and educational settings. The most prevalent strategy used by scholars is to define "achievement" in terms of the further acquisition, growth, or development of individuals' *initially prominent characteristics*; that is, the competencies, values, interests, and attitudes associated with their dominant or primary personality type. For example, in our recent book (Smart, Feldman, &

Ethington, 2000), *Academic Disciplines: Holland's Theory and the Study of College Students and Faculty*, we tested the validity of the congruence assumption by examining the extent to which college students with dominant Investigative, Artistic, Social, and Enterprising personality types who entered congruent and incongruent academic environments differed on their development of Investigative, Artistic, Social, and Enterprising abilities and interests, respectively. Separate analyses were conducted for each of the four personality types. Our findings provided rather clear support for the congruence assumption, though the evidence was decidedly stronger for students with Artistic and Investigative personality types than for those with Enterprising or Social personality types. Figure 1 illustrates our findings for students with a dominant Enterprising personality type and is reflective of the typical way in which the validity of the congruence assumption of Holland's theory has been tested in the research literature.

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 Present and Discuss Figure 1 here  
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The logic that flows from the traditional definition of "achievement" illustrated in our and others' findings is that students who enter congruent academic environments are more likely to be "successful" and to exhibit higher levels of "achievement." Conversely, students who select academic environments that are incongruent with their personality types are likely to be "less successful" or to manifest lower levels of "achievement" than would be expected.

Education is of course a nurturing profession, and our task, especially as teachers and counselors, is to assist students in their efforts to be "successful" throughout their college experiences. Given the conceptual appeal of Holland's theory and the accumulative evidence in support of the congruence assumption--though often of modest magnitude--counselors and others

have embraced the theory in their efforts to assist students in their efforts to successfully navigate the complexities and challenges of their college experiences. In so doing, the typical advice given students is to select academic majors (i.e., environments) that are congruent with their personality types. The strategy is simple and straightforward given the exemplary instruments developed by Holland and his colleagues to assess students' personality and academic environment types: simply (1) assess students' personality types using such established instruments as the SDS or the SCII, (2) look up academic majors that are similar to the students' personality types using such reputable references as the *Dictionary of Holland Occupational Codes* (Gottfredson & Holland, 1996) or *The Educational Opportunities Finder* (Rosen, Holmberg, & Holland, 1994), and (3) advise students to select academic majors that are congruent with their personality types. This has been, in my opinion, the typical or traditional approach to research on the validity of the congruence assumption of Holland's theory and the use of his theory by counselors and others to assist students in the selection of academic majors in which they have the greatest likelihood of being successful and satisfied.

All this is predicated on the selection of academic majors that are congruent with students' *initially prominent characteristics* (i.e., their dominant personality types). The vision of a "college education" that evolves from this strategy is one characterized by assisting students to further develop their primary or dominant interests and abilities they had as freshmen. To venture from this "tried and true" path was assumed to lead to dissatisfaction, failure, and dropout.

### **An Alternative Application of Holland's Theory in College Settings**

Something seemed amiss or disquieting to me as a result of such investigations of the congruence assumption in this manner. Our definition of "achievement" and the research

strategies we employ are essentially silent as to what students who entered incongruent academic environments learned in those environments because our definition and strategy of “learning” or “achievement” focused only on students’ further development of their *initially prominent characteristics*; again, that is, the competencies, values, interests, and attitudes associated with their dominant personality type.

This conceptual and analytical approach seems unfulfilling and problematic in college settings given that American higher education has historically sought to promote student growth and learning in a broad repertoire of competencies and interests. This repertoire is evident in the various taxonomies of college student outcomes developed by Bowen (1977), Lenning, Lee, Micek, and Service (1977), Ewell (1984), the Association of American Colleges (1985), and others. In addition, one need only examine the professed intent of colleges and universities as manifested in their catalogues and in the growing use of performance indicators proposed by statewide coordinating agencies to assess the effectiveness of those institutions (Nedwick, 1996). Are students who enter incongruent academic environments really “less successful” and, as a consequence, their institutions “less successful” as well?

My sense of discomfort led to two recent articles (Feldman, Smart, & Ethington, 2001, in press) that are grounded in that portion of Holland’s theory that is sociological in perspective and implicitly postulates a uniform pattern of reinforcement and reward by the respective academic environments irrespective of students’ levels of congruence with those environments. The approach is referred to as the “socialization assumption or hypothesis” of Holland’s theory.

Most important to remember here is that students’ “success” or “achievement” within the parameters of the socialization perspective is judged by the extent to which they grow in terms of the abilities and interests reinforced and rewarded by their chosen environments (i.e., their

academic majors) rather than enhancing their *initially prominent characteristics*. That is to say, for example, that while students who select academic majors that are incongruent with their personality types may remain the same or decline in their *initially prominent characteristics*, they may gain or grow in the abilities and interests reinforced and rewarded by their chosen academic major. This is a very different definition of students' "success" or "achievement" within the parameters of Holland's theory than the typical or traditional approach discussed earlier (i.e., students' ultimate satisfaction and success in college is dependent on their choice of an academic environment that is congruent with their personality type).

I want to focus now on the findings presented in our latest effort (Feldman, Smart, & Ethington, in press) that is based on information for 2,309 students in about 300 four-year colleges and universities when they were freshmen (1986) and four years later (1990). We had identical data on these students at both points in time reflecting self-ratings of various abilities and the importance they attached to various goals they hoped to achieve while in college. We developed a total of eight scales, shown in Table 1, to reflect students' Investigative, Artistic, Social, and Enterprising abilities and interests as freshmen (1986) and four years later (1990).

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 Present and Discuss Table 1 here  
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We used the four 1986 ability and interest scales to determine students' dominant personality type at the time they entered college. The profile for each of the 2,309 students was obtained and students were assigned to the personality type for which they had the highest scale score (in 1986). We did explore setting higher "bars" for classification as a particular personality type (e.g., using a criterion of at least five points higher on one scale than any other),

but we obtained essentially the same results whether we used the more stringent or less stringent criteria for classification. Thus, we kept our initial approach of using simply the highest 1986 scale score of a person to represent his or her dominant personality type.

Students' academic majors (i.e., environments) in 1990 were recoded to Holland's academic environments using *The College Majors Finder* (Rosen, Holmberg, & Holland, 1989). The reclassification of students' academic majors into Holland's academic environments is shown in Table 2.

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 Present and Discuss Table 2 here  
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We then used the preceding measures of students' dominant personality type and their chosen academic environments to classify them as being in congruent or incongruent environments.

We first adjusted students' initial scores (1986) on the four ability and interest scales to correct for regression-to-the-mean bias using the procedure recommended by Roberts (1980), and subsequently used repeated measure analysis of variance procedures to examine patterns of stability and change in students' abilities and interests over the four year period. Let me remind you that we judged students' "success" or "achievement" by the extent to which they "grew" in terms of the abilities and interests reinforced and rewarded by their chosen environments (i.e., their academic major)--our alternative interpretation of Holland's theory--rather than enhancing their *initially prominent characteristics*--the typical or traditional interpretation of Holland's theory. Our findings are presented in Table 3.

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 Present and Discuss Table 3 here

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Notice first that, in general, students majoring in a field matching their dominant personality type made sizable gains in their *initially prominent characteristics* while decreasing in their scores on these interests and abilities or making only very small gains if they majored in any of the three environments incongruent with their dominant personality type (in each of the four subtables of Table 3, compare data in the first row of the first column with the data in the second, third, and fourth rows of the first column). For example, students with a dominant Artistic personality type who entered an Artistic environment increased their Artistic scores by an average of 3.79 (effect size = 0.65), but only 0.66 (effect size = 0.12) if they entered Enterprising environments, and decreased by -2.31 (effect size = 0.43) if they entered Investigative environments and by -2.64 (effect size = 0.42) if they entered Social environments. This same pattern of change holds for the other personality types, with two minor exceptions. Enterprising students entering Investigative environments gained in Enterprising abilities and interest by 2.67 (effect size = 0.49), a somewhat larger increase in these abilities and interests than found for Enterprising students entering Enterprising fields (+2.20, effect size = 0.38); Enterprising students did, however, decrease in Enterprising abilities and interests if they entered either Social or Artistic environments. Similarly, although Social students entering Social environments did not gain as much in Social abilities and interests (+0.81, effect size = 0.13) than if they entered Artistic fields (+1.43, effect size = 0.29), they barely increased in these characteristics if they entered Investigative environments and decreased in them if they entered Enterprising environments.

Table 3 also shows what happened to students who majored in incongruent environments in terms of their change in the abilities and interests that are reinforced and rewarded by those



(incongruent) environments (see the single entries in the second, third, and fourth columns in each of the four subtables). Without exception for the twelve cases involved, students entering incongruent environments show an increase in the abilities and interests reinforced and rewarded by that (incongruent) environment. In eight of these cases the increases are relatively sizable--ranging from 2.31 (effect size = 0.43) to 4.71 (effect size = 0.96)--the largest in terms of effect size being Social, Enterprising, and Investigative students majoring in Artistic environments. In four of these twelve cases, the gains in incongruent fields are relatively small--ranging from 0.28 (effect size = 0.05) to 0.92 (effect size = 0.15).

We believe that the findings shown in Table 3 clearly support the socialization perspective of Holland's theory in that they demonstrate without exception that students entering incongruent academic environments show an increase in the distinctive set of abilities and interests reinforced and rewarded by their chosen academic environment, irrespective of their dominant personality type. Furthermore, the magnitude of their "loses" in terms of their *initially prominent characteristics* tend to be offset by or compensated for by the magnitude of their "gains" in the abilities and interests promoted by their chosen (but incongruent) academic environment. We regard (1) the consistency of our findings and (2) the "tradeoff" between stability or decline in *initially prominent characteristics* and increase in the abilities and interests fostered by their chosen academic environment to provide strong support for the sociological perspective found in Holland's theory. We conclude from these findings that students may have less to lose than might otherwise be thought, and, indeed, may gain considerably, from their choice of an incongruent academic environment in terms of their acquisition of abilities and interests fostered by their chosen environment.

## Research Implications

We believe the collective findings of our two most recent studies have important implications for those who conduct research on differential patterns of student learning. Despite the sociological component that is an integral part of Holland's theory (i.e., work and educational environments), the theory is largely a psychological one designed and used to assist individuals make educational and vocational choices that are most likely to contribute to their long term stability in, satisfaction with, and success in vocational and academic careers. In addition to this prevailing psychological emphasis on individuals, most of the research on the validity of the assumptions and premises of the theory has been conducted by psychologists. The cumulative effect of these conditions is that the substantive nature of work and educational environments and the effects of these environments--the sociological component of the theory--have not been a central concern of scholars. Instead, the environments tend to be viewed contingently, as a necessary means to the ultimate end of assisting individuals in their choice of satisfying and rewarding educational and vocational careers.

Our recent findings, however, provide support for the socialization assumption in Holland's theory by showing that the likelihood of students developing any specific repertoire of competencies and values is singularly dependent upon their entry into an academic environment that requires, reinforces, and rewards that particular repertoire. In fact, our collective findings suggest a stronger socialization than psychological dynamic at work for college students. We clearly believe that our findings suggest the need for greater attention to the socialization effects of academic environments in future research that seeks to provide understanding of the differential patterns of student learning within the context of Holland's theory.

## **Practical Implications**

We also believe that the collective findings of our two most recent studies have important implications for academic and career counselors in their efforts to assist students in their initial selection and subsequent performance in disparate academic environments (such as college majors). Past reliance on the psychological perspective of Holland's theory has led to advising students to select majors that are congruent with their dominant personality type in order to maximize the likelihood of their subsequent success in their chosen areas of study. In a sense, student choice is constrained by their existing personality profile and their choices are limited to those academic majors that are most likely to maximize their existing *initially prominent characteristics*.

Our recent findings supporting the sociological perspective of Holland's theory suggest that the advice provided students need not be constrained by students' past or present personality profile, but rather can be grounded in a more futuristic and developmental perspective based on the broad repertoire of competencies and interests that students aspire to develop as a result of their collegiate experiences. This approach, which is much less restrictive and constraining, focuses the advice given students on what they hope to be rather than what they presently are. Of importance here also are our additional findings indicating that this more futuristic and developmental perspective is not likely to impose hardship on students in terms of the level of their involvement in academic activities, the frequency of their engagement in social activities, or their satisfaction with their academic programs and career counseling services.

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Figure 1

## Patterns of Change in Enterprising Abilities and Interests

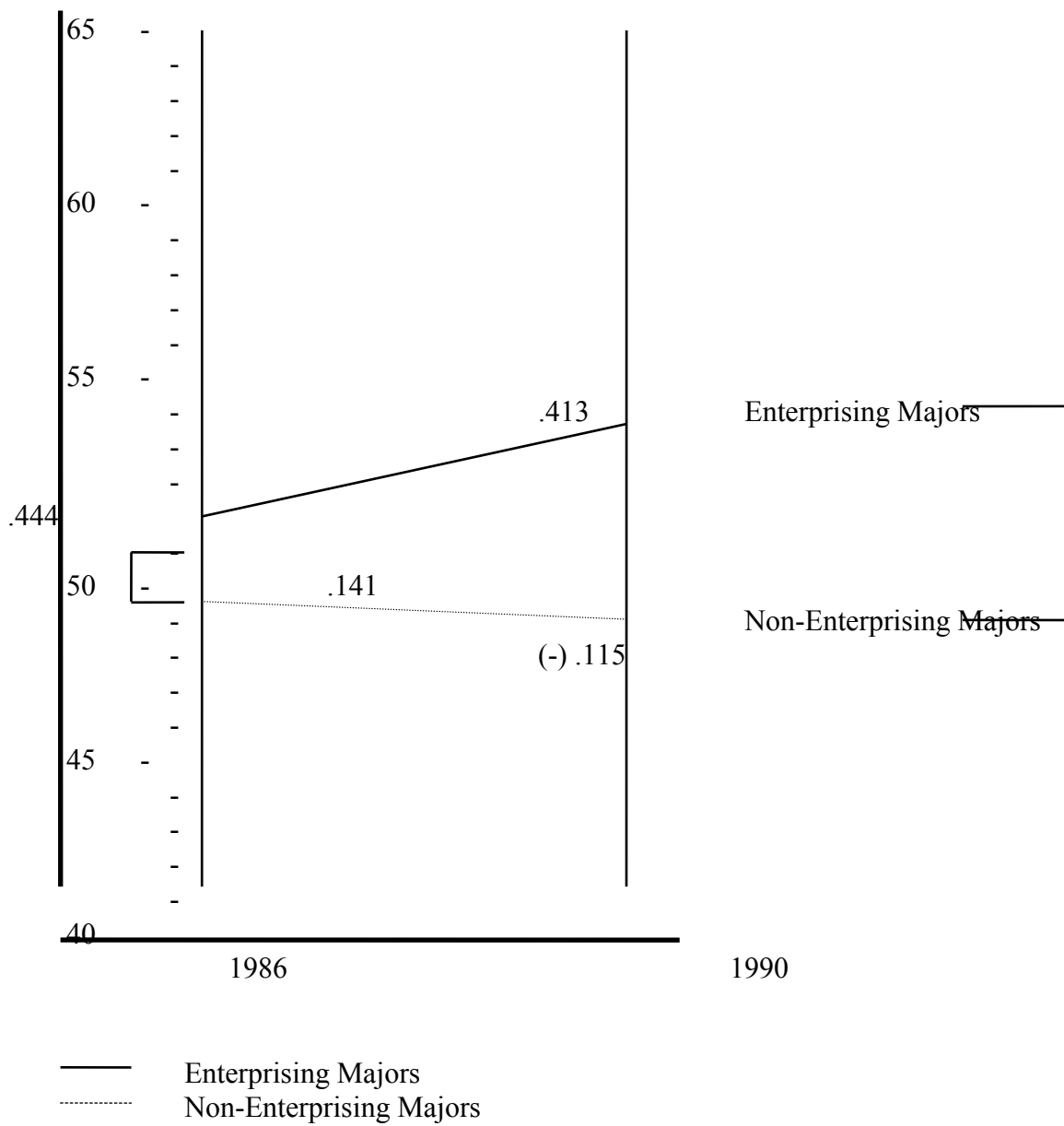


Table 1

## 1986 and 1990 Student Ability and Interest Scales

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| <u>1986 and 1990 Investigative Scales</u>  | <u>Reliability</u>     |
|--|------------------------|
| Self-rating: Self-confidence (intellectual)  | $\alpha = .682$ (1986) |
| Self-rating: Academic ability<br>(1990)  | $\alpha = .630$        |
| Self-rating: Mathematical ability  |                        |
| Self-rating: Drive to achieve  |                        |
| Goal: Making a theoretical contribution to science                                   |                        |
| <br>   |                        |
| <u>1986 and 1990 Artistic Scales</u>   | <u>Reliability</u>     |
| Self-rating: Artistic ability  | $\alpha = .683$ (1986) |
| Self-rating: Writing ability   | $\alpha = .697$ (1990) |
| Goal: Becoming accomplished in one of the performing arts (acting, dancing, etc.)    |                        |
| Goal: Writing original works (poems, novels, short stories, etc.)                    |                        |
| Goal: Creating artistic work (painting, sculpture, decorating, etc.)                 |                        |
| Goal: Developing a meaningful philosophy of life                                     |                        |
| <br>   |                        |
| <u>1986 and 1990 Social Scales</u>   | <u>Reliability</u>     |
| Goal: Influencing the political structure  | $\alpha = .750$ (1986) |
| Goal: Influencing social values  | $\alpha = .794$ (1990) |
| Goal: Helping others who are in difficulty   |                        |
| Goal: Becoming involved in programs to clean up the environment                      |                        |
| Goal: Participating in a community action program                                    |                        |
| Goal: Helping to promote racial understanding  |                        |
| <br>   |                        |
| <u>1986 and 1990 Enterprising Scales</u>   | <u>Reliability</u>     |
| Self-rating: Leadership ability  | $\alpha = .752$ (1986) |
| Self-rating: Popularity  | $\alpha = .762$ (1990) |
| Self-rating: Self-confidence (social)  |                        |
| Goal: Become an authority in my field  |                        |
| Goal: Obtaining recognition from my colleagues for contributions to my special field |                        |
| Goal: Having administrative responsibility for the work of others                    |                        |
| Goal: Being very well off financially  |                        |
| Goal: Being successful in a business of my own                                       |                        |
| Goal: Becoming an expert on finance and commerce                                     |                        |

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For the *Self-rating items*, students responded to the prompt “Rate yourself on each of the following traits as compared with the average person your age” using a scale of 1 = Lowest 10%; 2 = Below average; 3 = Average; 4 = Above average; 5 = Highest 10%. For the *Goal items*, students responded to the prompt “Indicate the importance to you personally of each of the following” using a scale of 1 = Not important; 2 = Somewhat important; 3 = Very important; 4 = Essential.

Table 2

## Students' 1990 Academic Majors Recoded into Holland Academic Environments

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|                                  |                             |                                 |
|----------------------------------|-----------------------------|---------------------------------|
| <u>Realistic Environment</u>     | <u>Artistic Environment</u> | <u>Enterprising Environment</u> |
| Electrical Engineering           | Art                         | Journalism                      |
| Mechanical Engineering           | English                     | Business Administration         |
| Marine Science                   | Language/Literature         | Marketing                       |
| Drafting/Design                  | Music                       | Management                      |
| Military Science                 | Speech                      | Business Education              |
|                                  | Theater/Drama               | Industrial Engineering          |
|                                  | Music                       | Communications                  |
| <u>Investigative Environment</u> | Art Education               | Computer Science                |
| General Biology                  | Architecture                |                                 |
| Biochemistry/Biophysics          |                             |                                 |
| Botany                           | <u>Social Environment</u>   | <u>Conventional Environment</u> |
| Marine (Life) Science            | History                     | Accounting                      |
| Microbiology/Bacteriology        | Philosophy                  | Secretarial Studies             |
| Zoology                          | Theology/Religion           | Data Processing                 |
| Aeronautical Engineering         | Elementary Education        |                                 |
| Astronautical Engineering        | Physical Education          | <u>Not in Holland</u>           |
| Civil Engineering                | Recreation                  | Other Humanities                |
| Chemical Engineering             | Special Education           | Other Business                  |
| Astronomy                        | Home Economics              | Secondary Education             |
| Atmospheric Science              | Library Science             | Other Engineering               |
| Chemistry                        | Nursing                     | Health Technology               |
| Earth Science                    | Political Science           | Therapy                         |
| Statistics                       | Psychology                  | Other Professional              |
| Pharmacy                         | Social Work                 | Other Social Science            |
| Premedicine                      | Women's Studies             | Other Technical                 |
| Predental                        | Law Enforcement             | Agriculture                     |
| Preveterinary                    |                             | Other Fields                    |
| Anthropology                     |                             |                                 |
| Economics                        |                             |                                 |
| Finance                          |                             |                                 |
| Geography                        |                             |                                 |
| Sociology                        |                             |                                 |

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Source: Rosen, Holmberg, and Holland, 1989.



Table 3

Average Change in Abilities and Interests for Students with Different Dominant Personalities  
Majoring in Academic Disciplines <sup>a</sup>

| <b>Investigative Personality<br/>Majoring in:</b> | Change in Investigative<br>Abilities and Interests | Change in Artistic<br>Abilities and Interests | Change in Social<br>Abilities and Interests | Change in Enterprising<br>Abilities and Interests |
|---|--|---|---|---|
| Investigative Fields                              | <b>+1.70</b> (56.57 to<br>58.27) .32               |   |   |   |
| Artistic Fields                                   | <b>-2.54</b> (53.47 to 50.93) (-<br>.52)           | <b>+4.03</b> (56.44 to<br>60.47) .82          |   |   |
| Social Fields                                     | <b>-0.90</b> (53.07 to 52.17) (-<br>.14)           |   | <b>+0.92</b> (48.05 to<br>48.97) .15        |   |
| Enterprising Fields                               | <b>+0.52</b> (54.08 to<br>54.60) .09               |   |   | <b>+3.22</b> (48.28 to<br>51.50) .57              |

| <b>Artistic Personality<br/>Majoring in:</b> | Change in Artistic<br>Abilities and Interests | Change in Investigative<br>Abilities and Interests | Change in Social<br>Abilities and Interests | Change in Enterprising<br>Abilities and Interests |
|--|---|--|---|---|
| Artistic Fields                              | <b>+3.79</b> (58.58 to<br>62.37) .65          |  |   |   |
| Investigative Fields                         | <b>-2.31</b> (55.75 to 53.44) (-<br>.43)      | <b>+3.69</b> (47.02 to<br>50.71) .68               |   |   |
| Social Fields                                | <b>-2.64</b> (56.71 to 54.07) (-<br>.42)      |  | <b>+3.35</b> (50.13 to<br>53.48) .54        |   |
| Enterprising Fields                          | <b>+0.66</b> (56.02 to<br>56.68) .12          |  |   | <b>+0.28</b> (48.60 to<br>48.88) .05              |

| <b>Social Personality<br/>Majoring in:</b> | Change in Social<br>Abilities and Interests | Change in Investigative<br>Abilities and Interests | Change in Artistic<br>Abilities and Interests | Change in Enterprising<br>Abilities and Interests |
|--|---|--|---|---|
| Social Fields                              | <b>+0.81</b> (53.80 to<br>54.61) .13        |  |   |   |
| Investigative Fields                       | <b>+0.25</b> (54.33 to<br>54.58) .05        | <b>+0.84</b> (49.22 to<br>50.06) .15               |   |   |
| Artistic Fields                            | <b>+1.43</b> (55.30 to<br>56.73) .29        |  | <b>+4.71</b> (52.38 to<br>57.09) .96          |   |

|                     |  |  |  |                                      |
|---------------------|--|--|--|--------------------------------------|
| Enterprising Fields | <b>-3.09</b> (53.42 to 50.33) (-<br>.55) |  |  | <b>+3.25</b> (49.18 to<br>52.43) .58 |
|---------------------|--|--|--|--------------------------------------|

| <b>Enterprising Personality<br/>Majoring in:</b> | Change in Enterprising<br>Abilities and Interests | Change in Investigative<br>Abilities and Interests | Change in Social<br>Abilities and Interests | Change in Artistic<br>Abilities and Interests |
|--|---|--|---|---|
| Enterprising Fields                              | <b>+2.20</b> (55.19 to<br>57.39) .38              |  |   |   |
| Investigative Fields                             | <b>+2.67</b> (55.99 to<br>58.66) .49              | <b>+2.31</b> (50.42 to<br>52.73) .43               |   |   |
| Social Fields                                    | <b>-1.91</b> (54.29 to 52.38) (-<br>.31)          |  | <b>+0.43</b> (48.79 to<br>49.22) .07        |   |
| Artistic Fields                                  | <b>-0.87</b> (56.43 to 55.56) (-<br>.18)          |  |   | <b>+4.57</b> (50.10 to<br>54.67) .93          |

<sup>a</sup> Average change is given in bold, with 1986 and 1990 scores in parentheses and effect sizes following.

