THE PREDICTION OF VOCATIONAL BEHAVIOR*

Donald E. Super and Ruth L. Seltzer
Horace Mann-Lincoln Institute
Teachers College, Columbia University

The Career Pattern Study is concerned with a number of different aspects of vocational behavior, three of which are directly or indirectly the subject of this report. These are: the nature of vocational maturity in adolescence and early adulthood, the nature of vocational success in early adulthood, and the relationships of psychological variables assessed in junior and senior high school to vocational status in early adulthood. Earlier papers in this series have dealt with problems of the first two types; this paper deals particularly with the last named problem, and in the process seeks to throw more light on the nature of vocational maturity. The problem studied, then, is the relationship between predictor variables (standard social and intellectual measures and especially developed measures of vocational maturity), studied in grades 9 and 12, on the one hand, and a variety of criterion variables (measures of vocational behavior including success and satisfaction) studied in young adulthood.

Subjects and Data

Subjects

The subjects of this report are all of the boys who entered the 9th grade in Middletown, New York, in the fall of 1951, who were still living in the spring of 1962, and for whom all necessary data were

*Supported in part by the U.S. Office of Education Cooperative Research Contract No. 1393. Presented at American Personnel and Guidance Association Convention, Washington, D.C., April, 1966.

available. The original group numbered 142, the survivors 140, and the subjects of this analysis 103, except that those who went to college and for whom college grades were available numbered 55, and occupational and position criteria were available for 86 and 89 subjects respectively.

Data

The data analyzed are those already discussed in other papers in this series of symposia. They consist of personal history data obtained by questionnaires and tape-recorded interviews, and of test and inventory results. The materials were content-analyzed, rated, judged, or scored, according to the nature of the instrument and of the data.

Observations were made when the subjects were in the 9th grade, at about age 15; in 12th grade, or at about age 18; and in what might be called the 19th grade, when the subjects were about 25 years old. The time span is therefore one of ten years, and it covers the period from the last year of junior high school until early adulthood.

Data were analyzed by appropriate correlational methods, in order to ascertain relationships between status in grades 9 and 19, and between status in grades 12 and 19. For ease of communication in a brief preliminary report, only relationships which are significant at the .01 level are shown in the tables.

Predictor Variables. Predictor data are the measures obtained in grades 9 and 12. They are of two types. Some are standard measures of parental socioeconomic level, intelligence, grades, peer

acceptance, participation in school and out-of-school activities, and level of vocational aspirations (listed in Tables 1 and 2). Others are generally novel measures designed to assess vocational maturity as manifested in relationships between vocational preferences and other data or in discussions of plans, objectives, and attitudes. The presumed measures of vocational maturity were factor analyzed and it is the factor scores derived from these measures which are used here. These factors are identifiable as factors of occupational information, of planning, of agreement of abilities and preferences, of independence of work experience, etc. They are listed in Tables 3 and 4. Only those factors which meet logical and psychometric requirements, and which show more than chance relationships with criteria, are reported here. All have been dealt with by Heyde, Jordaan, and Reichman in other papers in this series.

Criteria. The criteria are of three types: educational, occupational, and career. Some are self estimates, others are judges' ratings or categorizations. Educational criteria include educational level attained and quality grade point average in college (if the subject went to college). Occupational criteria include occupational level attained, and self-estimated success and satisfaction in one's position and occupation. Career criteria include self-estimated success and satisfaction in one's career; changes in equity or investment in an occupation associated with changes of position; realism of reasons for changing positions; a total career development score which is a combination of ratings and scores for equity change, realism in changing, goodness of fit in terms of abilities and interests,

attainment of goals, and socioeconomic and educational advancement since leaving high school; and floundering (including stagnation) versus establishment (which includes trial, instrumental behavior, and establishment) at age 25, judged by external socioeconomic and by internal or subjective psychological standards. Other criteria such as ratios of months unemployed and number of months self-supporting to months in the labor market are also used. One rather obvious occupational or position success criterion was tried but dropped: employers' ratings for the preceding five years yielded such a limited distribution that they were unusable, most employees and former employees being rated satisfactory. The distinction between position, occupation, and career was successfully made, as shown by intercorrelations of these criterion scores of about .50.

The criteria which satisfied both logical and psychometric requirements are those which are used in this report.

Results

High School Predictors and Young Adult Criteria

Table 1 shows the relationships between 9th grade predictor variables of the conventional types and selected criteria of success in grade 19, in the middle twenties. Table 3 does this for the presumed measures of vocational maturity which appear to have some validity. Tables 2 and 4 do the same for the same predictors at grade 12. Table 5 is a summary of the most promising predictors and criteria: those shown are selected because they yielded a large enough number of logical relationships for conclusions to be drawn with some confidence, or because further study may clarify and remove certain

apparent inconsistencies.

Prediction at Grade 9. Conventional predictors at grade 9 show a number of relationships with success in young adulthood. Parental socioeconomic level, intelligence, and junior high school grades have fair to moderate correlations not only with educational level attained and with grade point average in college, but also with most occupational and career criteria. These show up most clearly in Table 5; as inspection of Table 1 will show, these significant correlations are too numerous to be likely to be the chance product of a large number of correlations.

Vocational maturity in the 9th grade, as assessed by the factored measures, shows only chance relationships to vocational success in young adulthood. The 24 vocational maturity factors, and 41 occupational criteria with which we started, yield 984 correlations, of which only 14 are significant at the .01 level: as some of the criterion measures are interrelated, this is about what chance would produce. The three seemingly statistically significant correlations which the summary table reports at the 9th grade level must therefore be disregarded.

Prediction at Grade 12. Conventional predictors at grade 12 show correlations with young adult criteria which are more numerous and somewhat larger than those found at grade 9: as usual, the closer the predictor event is in time to the criterion event, the more closely they are related. Particularly striking is the correlation of high school grades with realism in changing positions (.53); so too

is that with the Career Development Score (.44). It is interesting to note that a simple measure of level of vocational aspiration in the 12th grade is related to occupational level attained at age 25, and to realism in changing positions, as well as to educational attainment, and that peer acceptance is related only to self-estimated position success in which peer relations are presumably more important than in occupational success (although not reported in these tables, it is, also, related to marital status at age 25). Participation in activities, school and out-of-school, also shows up rather well as a predictor.

Vocational maturity, assessed by the same factored measures as in grade 9, also shows more validity in grade 12. Only valid factors are reported here. The first factor, information about training and education required for the preferred occupation, shows a significant number of anticipated relationships, those with educational and occupational level attained being moderately high, those with career development and floundering-establishment being fair. Grade 12 information about supply and demand, another factor, also shows a logical as well as significant relationship with realism in changing positions after entering the labor market and until age 25.

The next factor shown in Table 5, the summary table, is difficult to interpret. If the signs yielded by the factor analysis were reversed, as is sometimes required by the data, the relationships would be illogical: specificity of planning, while still in 12th grade, to qualify for post-high school training or a beginning job, would then be said to be negatively related to occupational level attained,

self-estimated occupational and career satisfaction, and floundering-establishment at age 25. But the nature of the factor loadings on the measures entering into this score does not make it clearly logical to use either sign, for they appear contradictory. If the signs are chosen solely on the basis of the most heavily loaded variable, on the ground that the much less heavily loaded variables may actually have merely chance loadings, the relationships are all negative and the first interpretation would be warranted. This is difficult to accept.

The fourth factor included in Table 5, agreement between abilities possessed by the student and the abilities required by the occupation which he prefers, is logically related to self-estimated occupational satisfaction and career success, to floundering-establishment at age 25, and to college grade-point average.

The last factor which it seemed justifiable to include in the summary table is that of independence of work experience during the high school years. This is related only to self-estimated occupational satisfaction, although if more of the promising criteria are used (Table 4) it shows a positive relationship with movement to positions better suited to aptitudes, and a contradictory negative relationship with movement to positions less well suited to interests. This makes the factor difficult to interpret.

Discussion

Perhaps the most impressive finding of this ten-year study of the careers of junior high school boys is the degree of predictive validity

which conventional school variables have for occupational and career criteria as well as for educational criteria. That even 9th grade data of this type yield correlations of .25 - .35 with young adult criteria is impressive. Although it may seem discouraging that parental socioeconomic level still plays so important a part in vocational development, another interpretation of the predictive validity of social status, intelligence, grades, and participation in school and community activities is more encouraging. It is that boys who are exposed to opportunities for development, and who make use of these opportunities during their school years, tend to make good use of their later career opportunities.

The failure of the presumed measures of vocational maturity to have any predictive validity in the 9th grade, while a few of them are moderately valid in the 12th grade, is perhaps more informative than disappointing. The Career Pattern Study's second monograph reported, in 1960, that measures of realism and consistency of preferences lacked construct validity in the 9th grade, and that planning and foresight, revealed by awareness of choices to be made and by having information bearing on the choices, seemed to have some construct validity. This study of their relationship to criteria of success in young adulthood shows that even planning and information in the 9th grade lack predictive validity. Apparently the major negative conclusion of the earlier 9th grade study, questioned by Gribbons' and Lohnes' research, is borne out: 9th grade vocational behavior has not yet reached a stage of development at which it is systematically related to other variables.

The validity of certain 12th grade measures of vocational maturity is, on the other hand, encouraging. By the age of 18, it seems, vocational development has progressed far enough so that having information concerning the preferred occupation, and perhaps planning, realism, and independence of work experience, do have some relationship to vocational behavior at age 25.

THE PREDICTION OF VOCATIONAL BEHAVIOR

Donald E. Super and Ruth L. Seltzer

Horace Mann-Lincoln Institute of School Experimentation
Teachers College, Columbia University

U.S. Office of Education
Cooperative Research Contract No. 1393

American Personnel and Guidance Association Convention
Washington, D.C., April, 1966

Table 1

9th GRADE PREDICTORS OF AGE 25 CAREER CRITERIA*

Predictors	Educ'l Level	College Grades	Occup'l Level	Career Estab.	Position Success	Occ. Success	Career Success	Career Satisf.	Occ. Satisf.	Position Satisf.	Util. of Assets	Opp'y Self-Expr.	# Moves	# Mos. Unemployed	Self Support	Career Dev. Scales: Equity	Career Dev. Scales: Realism	Fit of Abilities	Fit of Interests	Relation to Goal	Socioec. Level	Educ'l Level	Total CD Score	Final Status: Ext. Soc. Criteria	Final Status: Int. Psych. Criteria
Intelligence	43	40	36				29		28			26					29					29	29	24	
Parental Occ. Level	34		29				30					28					34					26	24		27
Voc. Aspir. Level	40		29														29					30			
Agreement: Level of Voc. Aspir. & Expect.				24			30	26	32								24								
Grade Point Average	55	52	36	31			35		28			27				27	33					40	34		
Peer Acceptance					25																				

*$p \leq .01$ (N varies from 86 to 103)

Table 2

12th GRADE PREDICTORS OF AGE 25 CAREER CRITERIA*

Predictors**	Educ. Level	College Grades	Occ. Level	Career Estab.	Position Success	Occ. Success	Career Success	Career Satisf.	Occ. Satisf.	Position Satisf.	Util. Assets	Opp'y Self-Expr.	# Moves	# Mos. Unemployed	Self-Support	Career Dev. Scales: Equity	Realism	Abilities	Interests	Goal	Socioec. Level	Educ. Level	Total CD Score	Final Status: Ext. Soc. Criteria	Int. Psych. Criteria
Intelligence	46	50	41				32				25	25					29					36	27	28	
Parental Occ. Level	35		31	25		29	34	25	31			34					33					25	27	24	28
Occ. Aspir. Level	61		44														29					49			
# In-School Activities	36		44														28								
Yrs. Summer Employment																									
# Out-of-Sch. Activities	28		34							28														25	25
Grade Point Average	66	73	44	35			41	32	36		26	31				27	53					52	44	28	
Stability of Pref. Over 4 Yrs.																									

*$p \leq .01$ (N varies from 86 to 103)

**Four measures of Participation in Activities Relevant to Vocational Preference, e.g., Paid Work Experience, showed no validity and therefore were omitted from this table.

Table 3

9th GRADE VOCATIONAL MATURITY FACTORS AND AGE 25 CAREER CRITERIA*

Factors**	Educ. Level	College Grades	Occ. Level	Career Estab.	Position Success	Occ. Success	Career Success	Career Satisf.	Occ. Satisf.	Position Satisf.	Util. of Assets	Opp'y Self-Expr.	# Moves	# Mos. Unemployed	Self-Support	Career Dev. Scales Equity	Realism	Abilities	Interests	Goal	Socioec. Level	Educ. Level	Total CD Score	Final Status Ext. Socioec. Criteria	Int. Psych. Criteria
Occ. Info. Training & Ed. Req.																	25								
Nature of Duties																								28	
Socioec. Accessibility of Pref.																									
Agreement: Ability & Pref.									30																
Spec. of Plans for Qual. for Post-H.S. Training or Beginning Job							25																		
Spec. of Plans for Obtaining Post-H.S. Training or Beginning Job																						29			

*$p < .01$ (N varies from 86 to 103)

**The 6 (out of 24) Vocational Maturity Factors which showed significant relationships are presented here.

Table 4

12th GRADE VOCATIONAL MATURITY FACTORS AND AGE 25 CAREER CRITERIA*

Factors**	Educ. Level	College Gr.	Occ. Level	Career Estab.	Success Position	Occ.	Career	Satisf. Career	Occ.	Position	Util. Assets	Opp'y Self-Expr.	# Moves	# Mos. Unemp.	Self-Support	CD Equity	CD Realism	CD Abilities	CD Interests	CD Goal	CD Socioec.	Total CD Score	Final Status Ext. Soc.	Int. Psych.
Occ. Info.																								
Tr. & Ed. Rqmts.	51	33	46				27				24						30					30	27	
Opp'ys: Entry																								23
Hours of Work																					25			
Rationale for Job Duties																-29		34						
Supply & Demand				29													26							
Financial Rqmts.																			-26					
Security		33																		24				
Nature of Duties											24													
H.S. Bkgrnd Req.	26																							
Spec. of Plans for Qual. for Post-H.S. Training or Beg. Job			? 28					? 26	? 37		? 27	? 31											? 27	? 28
Agreement: Ability & Pref.		38		27			34		30														25	
Indep. of Wk. Exper.									28									24	-37					

*$p \leq .01$ (N varies from 86 to 103)

**The 12 (out of 25) Vocational Maturity Factors which showed significant relationships are presented here.

Table 5

SUMMARY: SELECTED 9th AND 12th GRADE VARIABLES CORRELATED WITH CRITERIA AT AGE 25 ($p \leq .01$)
N=103 (except, for College Grades, N=55, for Occupational and Position Criteria, N=86 to 89)

Predictors	Educational Level		Educational College Grades		Occup'l Level		Self-Est. Position Suc.	Self-Est. Position Sat.	Self-Est. Occupational Suc.	Self-Est. Occupational Satisf.	Self-Est. Career Success	Self-Est. Career Sat.	Equity Change		Realism: Reasons		CD Score		Floundering-Estab. Ext-Soc.	Floundering-Estab. Int-Psych.		
Conventional	9-9	9-12	9-9	9-12	9-9	9-12	9-9	9-12	9-12	9-9	9-12	9-9	9-12	9-12	9-9	9-12	9-9	9-12	9-9	9-12	9-9	9-12
Soc. Level	34	35			29	31			29		31	30	34	25			34	33	24	27		24	27	28
Intell.	43	49	40	50	36	41				28		29	32				29	29	29	27	24	28		
Sch. Grades	55	66	52	73	36	44				28	36	35	41	31	27	27	33	53	34	44		28		
Voc.Asp.Level	40	61			29	44											29	29						
Peer Accept.							25																	
Participation																								
Sch. Act.		36				44												28				25		
Non-Sch. Act.		28				34		28														25		
VM Factors																								
Occ. Info.																								
Training & Ed. Rqmts.		51		33		46						27					25*	31		30		27		
Supply&Dem.																		26						
Plans: Qual. post-H.S.Tr. or Beg. Job						?28					?37	25*		?26								?27		?28
Agreement: Abil.&Pref.				38						30*	30		34									25		
Independ. Work Exper.											28													

*Although significant at .01 level, these are among 14 "significant" r's out of 984, with some intercorrelated criteria.