

The Impact of CHOICES as a Function  
of Counsellor Intervention, Academic Ability and Sex

by

Peter Williams

B.Ed., University of Victoria, 1981

A THESIS SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in the Faculty

of


Education

ACCEPTED  
FACULTY OF GRADUATE STUDIES

DATE Nov 25, 83 DEAN

We accept this thesis as conforming  
to the required standard

  
Max R. Uhlemann

  
M. Honoré France

  
Michael A. Hunter

  
Joel Newman

© Peter Williams, 1983

University of Victoria

May 1983

All rights reserved. This thesis may not be reproduced  
in whole or in part, by mimeograph or other means,  
without the permission of the author.

Supervisor: Professor Max R. Uhlemann

#### ABSTRACT

The purpose of the study was to investigate the effect of the CHOICES program combined with varying degrees of counsellor intervention, two levels of student academic ability and sex differences on career maturity, ability to use the CHOICES computer terminal efficiently, and subject perception of the usefulness of the CHOICES program.

Thirty-two male and thirty-two female grade eleven students, classified as high and low-ability subjects on the basis of academic performance during the previous academic year, served as subjects for the study. Career maturity was measured by the Career Maturity Inventory (CMI), ability to use the CHOICES computer terminal was measured by assessing the student's error rate and student perceived satisfaction was measured by a questionnaire.

The results indicated that only high-academic ability female students obtained higher career maturity scores following treatment. Results of the ability to use the terminal data indicated that female students made fewer errors than male students. A significant interaction between academic ability and sex on student perceived

satisfaction indicated greater perceived benefits by low-academic ability female and high-academic ability male students in using the CHOICES program.

Recommendations for future research, implications for counsellors and career educators, and limitations of the present study were discussed.

Examiners:

[REDACTED]  
Max R. Uhlemann

[REDACTED]  
M. Honoré France

[REDACTED]  
Mike A. Hunter

Table of Contents

	<u>Page</u>
ABSTRACT.....	ii
TABLE OF CONTENTS.....	iv
LIST OF TABLES.....	vi
ACKNOWLEDGEMENT.....	viii
CHAPTER I: STATEMENT OF THE PROBLEM.....	1
CHAPTER II: REVIEW OF THE LITERATURE.....	3
The CHOICES Program.....	3
Degree of Counsellor Intervention.....	5
Academic Ability.....	8
Sex.....	9
Hypotheses.....	11
CHAPTER III: METHOD.....	12
Subjects.....	12
Dependent Measures.....	13
Apparatus.....	14
Procedure.....	15
Experimental Design and Statistics.....	21
CHAPTER IV: RESULTS.....	22
Career Maturity.....	22
Ability to Use the Terminal.....	33
CHOICES Questionnaire.....	36

CHAPTER V: DISCUSSION.....	39
Career Maturity.....	39
Ability to Use the Terminal.....	42
CHOICES Questionnaire.....	43
Recommendations.....	48
Limitations of the Present Study.....	52
REFERENCE NOTES.....	54
REFERENCES.....	55
APPENDICES.....	58
I CHOICES Questionnaire.....	59
II Letter to Students.....	64

List of Tables

<u>Table</u>	<u>Page</u>
1. Means and Standard Deviations of Female/Low, Female/High, Male/Low, and Male/High-Academic Ability Groups for Career Maturity Inventory Scores.....	25
2. Group by Sex by Academic Ability Analysis of Variance Results for Career Maturity Inventory Scores.....	26
3. One-way Analysis of Variance Results of Career Maturity Inventory Scores for Low-Academic Ability Female Students.....	27
4. One-way Analysis of Variance Results of Career Maturity Inventory Scores for High-Academic Ability Female Students.....	27
5. One-way Analysis of Variance Results of Career Maturity Inventory Scores for Low-Academic Ability Male Students.....	28
6. One-way Analysis of Variance Results of Career Maturity Inventory Scores for High-Academic Ability Male Students.....	28
7. Means and Standard Deviations of Female/Low, Female/High, Male/Low, and Male/High-Academic Ability Groups Averaged over Treatment Conditions for Career Maturity Inventory Scores.....	29
8. Three-way Analysis of Variance Results of Career Maturity Inventory Scores Averaged over Treatment Conditions.....	30
9. One-way Analysis of Variance Results of Career Maturity Inventory Scores Averaged over Treatment Conditions for Low-Academic Ability Female Students.....	31

10.	One-way Analysis of Variance Results of Career Maturity Inventory Scores Averaged over Treatment Conditions for High-Academic Ability Female Students.....	31
11.	One-way Analysis of Variance Results of Career Maturity Inventory Scores Averaged over Treatment Conditions for Low-Academic Ability Male Students.....	32
12.	One-way Analysis of Variance Results of Career Maturity Inventory Scores Averaged over Treatment Conditions for High-Academic Ability Male Students.....	32
13.	Means and Standard Deviations of Female/Low, Female/High, Male/Low, and Male/High-Academic Ability Groups for Invalid Input Scores.....	34
14.	Group by Sex by Academic Ability Analysis of Variance Results for Invalid Input Scores.....	35
15.	Means and Standard Deviations of Female/Low, Female/High, Male/Low, and Male/High-Academic Ability Groups for Total Scores of the CHOICES Questionnaire.....	37
16.	Group by Sex by Academic Ability Analysis of Variance Results for Total Scores of the CHOICES Questionnaire.....	38

Acknowledgements

I would like to acknowledge sincere appreciation to my committee, Max Uhlemann, Honore France, and Mike Hunter, who very willingly gave their time and assistance.

I would also like to acknowledge sincere appreciation to my father, Henry Williams, and to Judith McWilliam-Bourke for their support and for their patience and assistance in proofreading my thesis.

As well, to the sixty-four students who are the subjects of the study, I would like to offer a very warm thank you.

## Chapter I

### Statement of the Problem

Computer-assisted career guidance has been readily available in Canada since the late 1960's. The majority of the systems that currently exist have received positive evaluations and enjoy a good degree of popularity (Schenk, Murphy, & Shelton, 1980). Earlier systems, such as the System of Interactive Guidance and Information (SIGI) and the Student Guidance Information Service (SGIS), have been thoroughly investigated and evaluations of these systems usually have shown such positive effects as greater awareness of occupations and increases in career maturity (Rayman, Bryson, & Day, 1978). However, the more recent and most technologically advanced systems tend to have inconclusive research available to support their effectiveness (Cassie et al., 1979).

The CHOICES program is one of the most recent and technologically sophisticated computerized career guidance systems. In this system, clients receive immediate feedback from the computer and can change their responses as often as they wish. This allows the students to make preliminary decisions about occupational variables,

consider the limitations and consequences of their decisions outlined by the computer's feedback, and still have the option of modifying their choices if they wish. The CHOICES program has been available since field testing in 1977-78 (Wright, 1980) and is reported to be very popular (Wilson, 1979). However, the CHOICES program has little research available to support its effectiveness as a computer-assisted career guidance program.

The CHOICES program is designed to be used in conjunction with a counsellor. However, there is little agreement among practicing counsellors as to how much counsellor intervention time, if any, is necessary to optimize the CHOICES program. In this study, all references to the CHOICES program assumed that the program was implemented with at least a minimal level of counsellor intervention, which included a counsellor providing an introduction to the program and an aide assisting the students on the terminal as required.

The purpose of the present study was to investigate the effect of the CHOICES program combined with varying degrees of counsellor intervention, two levels of student academic ability and sex differences on career maturity, ability to efficiently use the CHOICES computer terminal, and students' perceptions of the usefulness of the CHOICES program.

## Chapter II

### Review of Literature

Presented below is a review of the literature specifically related to the CHOICES program. As well, a review of the general literature relevant to computer-assisted career counselling is presented as it relates to the three specific factors investigated in this study. These factors include degree of counsellor intervention, level of student academic ability, and sex. Following the literature review, a list of hypotheses are presented for the study.

#### The CHOICES Program

The CHOICES program has been purported as not only a fast, comprehensive source of career information, but also as a means of enhancing career maturity (Katz & Shatkin, 1980; France & Sloan, 1982; & Starr, Note 2) and a method of increasing self awareness of interests, abilities, and aspirations (Employment and Immigration Canada, 1978).

Katz & Shatkin (1980) and France & Sloan (1982) offered practical arguments to suggest that the CHOICES program has a positive impact of vocational decision making, an aspect of career maturity. They argued that

allowing a person to interact with the CHOICES program, which presents career alternatives combined with consequences based on the user's decisions, provides a method of learning decision-making processes.

Specifically, they suggest that through experience with CHOICES skills (such as reviewing options, prioritizing, making preliminary decisions, etc.,) are indirectly learned. Therefore, decision-making and career maturity are implicitly enhanced.

The CHOICES program is reported to be popular, widely used, and considered effective by many vocational counsellors, however, it is a relatively new system with little research available to support the above mentioned claims.

The following three studies were investigations employing single group designs assessing the user's perception of whether using CHOICES was beneficial. In 1977/78, a pilot study was initiated to establish the efficacy of CHOICES as a career-guidance tool and to obtain guidelines for large-scale implementation of the program (Wright, 1981). The pilot study surveyed 2700 students in 12 representative (not randomly selected) secondary schools and colleges in B.C. and found that 83% of the students participating in the pilot study indicated satisfaction with their CHOICES interaction in the sense that they enjoyed the experience. Cassie et al. (1979) surveyed 317

secondary students in grades 9 to 13 with a questionnaire to evaluate their use of CHOICES. They found that the system was used extensively, that many students indicated they would make further use of the system if it were available in the future, and that students would enthusiastically recommend the program to their peers. Guerette (Note 1) also assessed student attitudes toward the CHOICES program with a questionnaire and reported 89% of the students indicated their interaction with the CHOICES terminal was either beneficial or very beneficial.

To date, Starr (Note 2) has performed the only experimental investigation measuring the effect of CHOICES on career maturity. She used a pre/post-test, experimental/control group design with both university bound and non-university bound grade twelve students. Using the Career Maturity Inventory (CMI) (Crites, 1973, 1978) as a dependent measure, she found a significant difference between the experimental and control groups suggesting that the CHOICES program had a positive effect on career maturity. No differences were found for academic ability (defined as university bound or non-university bound subjects) or for sex.

#### Degree of Counsellor Intervention

The CHOICES program is a computer-assisted career guidance system that was designed to be implemented with counsellor intervention before the terminal interaction

to prepare the students to use the computer terminal. As well, the CHOICES program is designed to have a counsellor interact with the students after they spend time working on the computer terminal in order to debrief the students and plan subsequent career related actions (Jarvis, 1976).

However, there is little agreement among practicing counsellors as to how much counsellor intervention time, if any, is necessary to optimize the CHOICES program and, according to Cassie et al. (1979), frequently the system is not implemented according to the theoretical guidelines outlined by Jarvis (1976), the principle author of the CHOICES program. Observing the lack of agreement among counsellors as to how to implement the CHOICES program, Starr (Note 2) suggested that the optimal level of counsellor intervention should be clarified through further research. However, to date, little attention has been directed to this question in the professional literature.

On the other hand, the optimal level of counsellor intervention with computer-assisted career guidance systems in general has been researched. Working with 124 behavioural science students at a community college, Sampson (1977) investigated the effect of three levels of counsellor intervention (structured, non-structured, and control) with SIGI. Student perceived effectiveness of the system, as measured by a questionnaire, indicated students perceived greater value in a more structured approach.

Sampson and Stripling (1979) suggested that the amount of structured counsellor intervention was related to the efficacy of computerized career guidance programs. Using community college students as subjects, they provided three levels of counsellor intervention: structured, non-structured, and a control group receiving no intervention. The treatment also consisted of interacting with SIGI. Analyzing individual items of the SIGI Evaluation Questionnaire: Form E (Chapman, 1975), they found significantly higher ratings both for the structured and the control groups as opposed to the unstructured group on items related to overall satisfaction with SIGI and the effectiveness of SIGI in teaching awareness of values and the career decision-making process. The structured group was significantly higher than both the non-structured and control groups on items related to helping the client find out what occupations fit their individual values. They suggested that, generally, structured counsellor intervention strategies should be employed over non-structured intervention, but that computer-assisted career guidance systems should be available for independent use as well.

In commenting on the value of counsellor intervention with computer-assisted career guidance systems, Shatkin (1980) agrees with the above mentioned findings. He stated that, "The success of the user's interaction is a direct function of the counsellor's participation in reviewing the

appropriateness of the profile at which the user has arrived." (pp. 9).

Thus, the first purpose of this study was to investigate career maturity as a function of the CHOICES program combined with varying levels of counsellor intervention.

#### Academic Ability

Differential effects of academic ability with computer-assisted career guidance systems have been investigated with generally consistent results. Starr (Note 2) observed that academically oriented students scored higher in career maturity than vocationally oriented students, but she found no significant differences in career maturity gain between levels of academic ability as a function of using the CHOICES program. Melhus, Hershenson, and Vermillion (1973) reported a relationship between academic achievement and career maturity. They found high-ability students made similar positive gains in career maturity by interacting with a counsellor or a computer-assisted program, while low-ability students made greater gains in career maturity interacting with a counsellor, rather than with a computer-assisted program.

Sampson and Stripling (1979) did not specify an empirical rationale, but noted that some students find it helpful to use a computer-assisted system independent of a counsellor. Shatkin (1980) agreed and suggested that, more

sophisticated users can employ the system with less counsellor intervention. These authors imply a potential interaction between levels of counsellor intervention and student academic performance. Therefore, it would be useful to investigate these two variables simultaneously. Thus, a second purpose of this study was to investigate the effect of academic ability on career maturity.

### Sex

The effect of computer-assisted career counselling as a function of sex has also been investigated. Omvig and Thomas (1977) measured the career maturity of 2600 sixth and eighth grade students in Kentucky with the CMI and found that females in both grades scored significantly higher. Smith and Herr (1972), working with a population of 2160 eighth and tenth grade students, found significant sex differences for career maturity, as measured by the Vocation Development Inventory-Attitude Scale. They also found females to score higher than males.

Cassie (1976) examined the effects of the SGIS program. Subjects in four randomly selected Ontario Secondary Schools were categorized on the basis of sex and grade to treatment and control groups and pre- and post-tested with the CMI. He found that the females made greater gains in career maturity using SGIS than males. Cassie interpreted these results to suggest sex differences influence the rate and degree of vocational maturity.

On the other hand, Starr (Note 2) investigated sex differences in gains in career maturity as a function of interacting with the CHOICES program and found no significant sex differences. Crites' (1965) results agree with the findings of Starr (Note 2) that sex does not appear to be an important aspect of career maturity. Thus, there is conflicting evidence about the existence or importance of sex differences in career maturity. Therefore, a third purpose of this study was to investigate sex differences in career maturity.

#### Summary

Based on the literature reviewed assessing the efficacy of the CHOICES program and that related to computer-assisted career guidance systems in general, the present study will take into consideration three factors: the CHOICES program with different levels of counsellor involvement, student academic ability, and sex differences. The impact of these factors will be investigated by assessing their effect on career maturity, the ability of the students to efficiently use the CHOICES computer terminal, and the students' perception of whether the CHOICES program was beneficial. Thus the purpose of the present study was to investigate the CHOICES program as a function of the following variables: (1) the optimal level of counsellor involvement required in the CHOICES program; (2) the effect of student academic ability; (3) the effect

of sex differences; and (4) the possible interactions of these three factors.

### Hypotheses

On the basis of the review of literature, the following hypotheses were made:

1. Students who receive a higher level of counsellor intervention with the CHOICES program will score higher on the CMI than those receiving less counsellor intervention, and this effect will be stronger for students in the low-ability group than for those in the high-ability group.

2. The three treatment groups (full counsellor intervention, partial counsellor intervention, and minimal counsellor intervention) will differ in their ability to use the CHOICES terminal efficiently, as measured by their error rate (number of invalid inputs).

3. The three treatment groups will differ in their rating of whether using the CHOICES program was a beneficial experience, as measured by an opinion survey.

4. No prediction was made for sex.

## Chapter III

### Method

#### Subjects

In practice, the students that most commonly use the CHOICES program are grade eleven and twelve students. This meant that most grade twelve students had been exposed to the CHOICES program, creating a potential confound. Thus, because a naive population of grade eleven students was readily available, subjects were drawn from grade eleven students in School District 61.

A total of sixty-four subjects were classified according to sex and academic ability (determined on the basis of academic performance during grade ten) to form 4 groups with sixteen subjects in each of the categories: (1) high-academic ability males; (2) high-academic ability females; (3) low-academic ability males; and (4) low-academic ability females. The high-academic ability groups consisted of students with an 'A' or 'B' average and the low-academic ability groups consisted of students with a 'C-', 'C' or 'C+' average. Subjects were randomly assigned to each treatment condition (described below). Thus, there were sixteen subjects in each of the four conditions; eight subjects (four females and four males) having high-academic

ability and eight subjects (four females and four males) having low-academic ability.

#### Dependent Measures

Career Maturity Inventory. The first dependent measure, the Attitude Scale of the Career Maturity Inventory (CMI), was constructed by Crites (1973; 1978) to measure the developmental vocational variable of career maturity. The Attitude Scale consists of fifty true/false statements that measure the client's attitudes toward the career choice process, (Crites, 1981). Crites (1981) asserts that the CMI has been researched and validated on a wide selection of factors, including indices of personal/social adjustment and realistic vocational choice. Hansen (1973) concludes, "Reliability and validity data extending from 1961 are sufficient to establish the Attitude Scale (of the CMI) as an instrument that measures ... career attitude maturity." pp. 171.

Subject Error Rate. The second dependent measure, subject error rate, was determined by measuring the number of invalid inputs. Invalid inputs are subject responses on the computer terminal that are inappropriate because the subject has failed to follow the directions given by the computer. This measure gave a rating of the effectiveness of the counsellor intervention in training the subjects to work effectively with the CHOICES terminal. This dependent measure was recorded automatically by the computer and was

not used with the control group since they did not receive time on the computer during the study.

CHOICES Questionnaire. The third dependent measure, the CHOICES Questionnaire (CQ), was a questionnaire designed to assess the subject's perception of whether the CHOICES program was beneficial (Appendix I). The CQ consisted of fifteen multiple choice questions. Nine questions surveyed the student's perception of the usefulness of the CHOICES program in general. Four questions surveyed the student's perception of the usefulness of working with the counsellor. And, two questions surveyed the student's perceptions of working with the CHOICES computer terminal. The students were asked to rate their experiences by choosing from the following response options: (1) "very useful", (2) "somewhat useful", (3) "neutral", (4) "not necessarily useful", and (5) "definitely not useful".

#### Apparatus

The Digital Decwriter and Computer Terminal Room. The Digital Decwriter (model LA 34-AA) is a typewriter/printer through which the subjects interacted with the CHOICES terminal. The terminal was maintained by a trained aide. A room with a table and chair was used when the subjects interacted individually with the computer.

The Travel Guide. The Travel Guide (Employment and Immigration Canada, 1978) is designed to prepare the

students to use the CHOICES computer terminal. The students outline in their Travel Guides the career related factors they want to address during their terminal interaction time. In other words, the Travel Guide is an outline of the topics and factors on which the computer is programmed to provide information.

The CHOICES Handbook. The CHOICES Handbook (Employment and Immigration Canada, 1978) is designed to provide the students with an explanation of how the CHOICES program functions and provide instructions and examples that enable the students to complete the Travel Guide.

The Master List of Occupations. The Master List of Occupations (Employment and Immigration Canada, 1978) is a list of all the occupations in the memory of the CHOICES computer.

#### Procedure

Permission to conduct the study in School District 61 was obtained from the office of the Superintendent. Subjects were contacted by a letter (Appendix II) that asked for participation in a study to determine the effectiveness of the CHOICES program. All volunteers were informed that they would be administered the Attitude Scale of the CMI and a survey of their opinions about CHOICES. The researcher, a graduate student from the University of Victoria (hereafter referred to as the 'counsellor') provided the treatment in groups of sixteen or on an

individual basis, depending on the stage of intervention.

The counsellor was a second year graduate student in counselling who had three years experience teaching in the public school system. The counsellor's educational qualifications to use the CHOICES program and provide vocational counselling included: a vocational counselling theories course, a prepracticum in vocational counselling, and a training course specifically related to implementing the CHOICES program. In addition to these three credit courses, each of which required thirty-six hours of classroom time, the counsellor had also completed one hundred hours of practicum experience at a secondary school. The practicum experience mainly consisted of implementing the CHOICES program and other related vocational counselling activities.

The counsellor followed the guidelines outlined in the CHOICES Counsellor's Manual (Employment and Immigration Canada, 1978), omitting only those portions of the recommended intervention according to the stipulations of the study in order to vary the degree of counsellor intervention. All interventions were conducted at Oak Bay Secondary School which had a trained aide previously assigned. Thus, excluding the time spent by the aide, the regular counselling staff were not required to schedule time to participate in the study, except to assist in the selection of subjects.

### Levels of Counsellor Intervention

The level of counsellor intervention was divided into stages on the basis of what is frequently observed in practice in the B.C. Secondary Schools and on the basis of what would seem to be logical stages of the CHOICES program. The program was divided into four stages. During the first two stages, the Introductory Stage and the Explanatory Stage, students met with the counsellor as a group of sixteen for approximately one half hour and two hours, respectively. The third stage, the Terminal Interaction Stage, consisted of spending up to sixty minutes interacting with the CHOICES terminal individually. Within a week of the Terminal Interaction Stage, the students met individually with the counsellor for approximately one half hour for a debriefing interview, which was the fourth stage, the Post-Counselling Stage. Presented below is an elaboration of counsellor and student activities in each of these stages.

Introductory Stage. The counsellor showed the students, in groups of sixteen, a picture of the CHOICES terminal and an example printout, explained the way the system functions in terms of routes, topics and factors, gave out the CHOICES Handbook and Travel Guide, introduced the Master List of Occupations, and demonstrated how to fill out one topic (i.e., environmental conditions). The students then proceeded immediately to the Explanatory

Stage.

Explanatory Stage. In this stage, the counsellor completed the following list of activities: (1) further explained each topic of the Travel Guide and offered a caution for each topic from the prepared caution sheet; (2) discussed and defined the factors that made up each topic and how the selection of particular factors would limit the choice of occupations; (3) assisted the subjects in defining and prioritizing the topics used in the CHOICES program; and (4) scheduled time to interact with the terminal (within one week of the group meeting) and a debriefing interview (within one week of the terminal interaction); (5) discussed the client's career objectives and reactions to the Travel Guide; (6) explored the client's values in light of the decisions made in the Travel Guide; (7) encouraged the clients to be flexible when interacting with the terminal by changing answers whenever they want to; and (8) discussed career counselling by contrasting the concept of process, as opposed to products and how it applies to the CHOICES program.

Terminal Interaction Stage. In individual meetings, approximately one week later, the aide: (1) gave operating instructions for the terminal and stayed with the student until he or she had completed the first two topics of the Travel Guide, insuring each student had a clear understanding of how the terminal functioned; (2) demonstrated

how to change an answer during the second topic; (3) brought the Master List of Occupations to the student's attention and indicated that it would be useful when using the Specific, Compare, and Related routes; and (4) left the student to interact independently with the terminal for up to sixty minutes. The aide remained in the room (at a separate table) but did not interfere with the student's interaction, unless there was a malfunction of the system or the student was confused as to how to proceed and asked for assistance, in which case the aide intervened momentarily to enable the student to complete the interaction. Students were instructed to use the washroom facilities prior to beginning the session and were asked not to leave the room until they had completed the terminal interaction. Following the terminal interaction, the students made an appointment for a Post-Counselling session.

Post-Counselling Stage. The students were individually debriefed by the counsellor. The post-counselling covered the following topics: (1) discussion of the student's reaction to the system; (2) analysis of the Explore route for content priority with the aid of the summary; (3) analysis of the Related route; (4) analysis of the Specific and Compare routes; (5) assessment of the student's readiness to decide on occupational goals by exploring the student's feelings and needs; and (6) development of

a plan of action. Following the Post-Counselling stage, the students individually completed the CMI and the CQ.

#### Treatment Conditions

Full Counsellor Intervention. In Condition I, students received all four stages of counsellor intervention. The students met with the counsellor in groups of sixteen for the Introductory Stage and Explanatory Stage, then booked a time to use the terminal. The students then completed the Terminal Interaction Stage individually. Within approximately one week, the students met individually with the counsellor for the Post-Counselling Stage. Finally, following the Post-Counselling Stage, the students completed the CMI and the CQ.

Partial Counsellor Intervention. Condition II was the same as Condition I excluding the Post-Counselling Stage. Thus, this group received the Introductory Stage, the Explanatory Stage, the Terminal Interaction Stage, and completed the CMI and the CQ, and then received the Post-Counselling Stage. In other words, this group received the Post-Counselling Stage after completing the dependent measures.

Minimal Counsellor Intervention. Condition III was the same as Condition I excluding the Post-Counselling Stage and the Explanatory Stage. Thus, this group received

the Introductory Stage and the Terminal Interaction Stage, and then completed the CMI and the CQ. This group also received the Post-Counselling Stage after completing the dependent measures, but did not receive the Explanatory Stage because it must occur prior to the Terminal Interaction Stage to be of any value.

Control Condition. This group of subjects, Condition IV, received no counsellor intervention and no time on the terminal prior to completion of the dependent measure (the CMI only). After completing the CMI, the control subjects were provided the treatment given in Condition I. Thus, the Control Condition was a wait-list Control Group.

#### Experimental Design and Statistics

The design was a 4 (counsellor intervention) x 2 (subject academic potential) x 2 (sex) independent groups factorial. The results were initially analyzed as a 4 x 2 x 2 factorial ANOVA for CMI scores. The data were then collapsed over Treatment Conditions and treated as a comparison between Treatment and No Treatment. The CMI scores were then analyzed again as a 2 x 2 x 2 factorial ANOVA. Two separate 3 x 2 x 2 factorial ANOVA's were performed on the results of the ability to use the terminal scores and the CQ scores.

## Chapter IV

### Results

The data collected were the following: career maturity, as measured by the CMI; ability to efficiently use the CHOICES terminal, as measured by the number of errors recorded during the terminal interaction time; and subject perception of the degree of usefulness of the experience of using the CHOICES program, as measured by the CQ. The results will be presented in this order with a section devoted to each measure.

#### Career Maturity

Means and standard deviations for the CMI scores are presented in Table 1. These scores were analyzed using a 4 (treatment conditions) x 2 (academic ability) x 2 (sex) ANOVA. There were no significant main effects or two-way interactions, nor did any of these effects account for a significant amount of variance in career maturity (Table 2).

The failure of the three-way interaction to reach accepted levels of statistical significance ( $p < .06$ ) appears to be due, in part, to the small sample size ( $n=4/\text{cell}$ ), which has a considerable effect on statistical significance. However, a P value produced by a small sample size is more

impressive than a similar P value produced by a larger sample size. Therefore, Omega squared ( $\omega^2$ ), which is not affected by sample size, was calculated (Rosenthal and Gaito, 1963; and Keppel, 1982). An  $\omega^2$  of .07 was found. Keppel (1982) considered this score to be in the range of a moderate magnitude of effect. Considering the small sample size and the healthy magnitude of effect, the lack of significance of the three-way interaction was not dismissed.

The nearly significant group x academic ability x sex interaction ( $p < .06, \omega^2 = .07$ ) appeared to be due to the high-academic ability females and the low-academic ability males obtaining higher career maturity scores following treatment (Table 1).

In order to further explore this interaction, separate one way groups ANOVAs were performed for each of the sex by academic ability subgroups. None of these analyses were statistically significant, although the results of the ANOVAs of the high-academic ability females and low-academic ability males approached accepted levels of statistical significance (Tables 4 and 5).

These analyses may not have produced stronger results because the overall comparison involved four group means (Control and three Treatment Conditions), which may have obscured a simple difference between treatment and no treatment. Therefore, the data were collapsed across

Treatment Conditions and the three-way analysis of variance was repeated as a 2 x 2 x 2 factorial.

A significant treatment x academic ability x sex interaction ( $P < .05$ ,  $\omega^2 = .05$ ) was found and appeared to be due to the high-academic ability female students scoring higher than their Control Condition (Table 7). However, the low-academic ability female students, low-academic ability male students, and high-academic ability male students did not score differently than their respective Control groups.

Again, in order to further explore this interaction, separate one-way group ANOVAs were performed on the averaged means for each of the sex by academic ability subgroups. A significant treatment effect was found for the high-academic ability female group ( $P < .01$ ) indicating that across treatment groups, high-academic ability female students scored significantly higher in career maturity than their Control group (Table 10). The other groups were not significantly different in career maturity scores, indicating that low-academic ability female students and male students did not score significantly different than their respective Control Conditions.

Table 1

Means and Standard Deviations of Female/Low,  
 Female/High, Male/Low, and Male/High-Academic  
 Ability Groups for Career Maturity Inventory Scores

	Female/Low Means	Standard Deviation	N	Male/Low Means	Standard Deviation	N
Control	33.00	5.48	4	33.75	2.50	4
Minimal	33.75	4.11	4	36.75	3.77	4
Partial	33.25	1.71	4	31.25	3.20	4
Full	30.25	4.99	4	36.00	1.41	4
	Female/High Means	Standard Deviation	N	Male/High Means	Standard Deviation	N
Control	29.75	2.63	4	36.00	4.24	4
Minimal	34.50	3.00	4	33.00	4.08	4
Partial	37.00	3.16	4	37.00	1.41	4
Full	35.00	4.55	4	32.75	6.08	4

Table 2

Group by Sex by Academic Ability Analysis of  
Variance Results for Career Maturity Inventory Scores

Source	df	SS	MS	F	P
Main Effects					
Group*	3	26.25	8.75	0.62	0.61
Sex	1	25.00	25.00	1.76	0.19
AC**	1	12.25	12.25	0.86	0.35
Two-way Interactions					
Group by Sex	3	42.50	14.17	1.00	0.40
Group by AC	3	90.25	30.08	2.11	0.11
Sex by AC	1	6.25	6.25	0.44	0.51
Three-way Interaction					
Group by Sex by AC	3	112.25	37.42	2.63	0.06
Residual	48	683.00	14.23		
Total	63	997.74			

\*Group = Control, Minimal, Partial, and Full

\*\*AC = Academic Ability

Table 3

One-way Analysis of Variance Results of Career Maturity  
Inventory Scores for Low-Academic Ability Female Students

Source	df	SS	MS	F	P
Between	3	26.69	9.90	0.53	0.67
Within	12	224.25	18.69		
Total	15	253.94			

Table 4

One-way Analysis of Variance Results of Career Maturity  
Inventory Scores for High-Academic Ability Female Students

Source	df	SS	MS	F	P
Between	3	113.19	37.73	3.24	0.06
Within	12	139.75	11.65		
Total	15	252.94			

Table 5

One-way Analysis of Variance Results of Career Maturity  
Inventory Scores for Low-Academic Ability Male Students

Source	df	SS	MS	F	P
Between	3	73.69	24.56	3.00	0.07
Within	12	98.25	8.19		
Total	15	171.94			

Table 6

One-way Analysis of Variance Results of Career Maturity  
Inventory Scores for High-Academic Ability Male Students

Source	df	SS	MS	F	P
Between	3	54.69	18.23	0.99	0.43
Within	12	220.75	18.40		
Total	15	275.44			

Table 7

Means and Standard Deviations of Female/Low,  
 Female/High, Male/Low, and Male/High-Academic  
 Ability Groups Averaged over Treatment Conditions  
 for Career Maturity Inventory Scores

	Female/Low Means	Standard Deviation	N	Male/Low Means	Standard Deviation	N
Control	33.00	5.48	4	33.75	2.50	4
Treatment	32.42	3.85	12	34.67	3.70	12
	Female/High Means	Standard Deviation	N	Male/High Means	Standard Deviation	N
Control	29.75	2.63	4	36.00	4.24	4
Treatment	35.50	3.48	12	34.25	4.39	12

Table 8

Three-way Analysis of Variance Results of Career Maturity  
Inventory Scores Averaged over Treatment Conditions

Source	df	SS	MS	F	P
Main Effects					
Group	1	14.08	14.08	0.94	0.34
Sex	1	25.00	25.00	1.66	0.20
AC	1	12.25	12.25	0.81	0.37
Two-way Interactions					
Group by Sex	1	27.00	27.00	1.80	0.19
Group by AC	1	10.08	10.08	0.67	0.41
Sex by AC	1	6.25	6.25	0.42	0.52
Three-way Interactions					
G x S x AC	1	60.75	60.75	4.04	0.049
Residual	56	842.33	15.04		
Total	63	997.74			

Table 9

One-way Analysis of Variance Results of Career Maturity  
Inventory Scores Averaged over Treatment Conditions  
for Low-Academic Ability Female Students

Source	df	SS	MS	F	P
Between	1	1.02	1.02	0.06	0.82
Within	14	252.92	18.07		
Total	15	253.94			

Table 10

One-way Analysis of Variance Results of Career Maturity  
Inventory Scores Averaged over Treatment Conditions  
for High-Academic Ability Female Students

Source	df	SS	MS	F	P
Between	1	99.19	99.19	9.03	0.009
Within	14	153.75	10.98		
Total	15	252.94			

Table 11

One-way Analysis of Variance Results of Career Maturity  
Inventory Scores Averaged over Treatment Conditions  
for Low-Academic Ability Male Students

Source	df	SS	MS	F	P
Between	1	2.52	2.52	0.21	0.66
Within	14	169.42	12.10		
Total	15	171.94			

Table 12

One-way Analysis of Variance Results of Career Maturity  
Inventory Scores Averaged over Treatment Conditions  
for High-Academic Ability Male Students

Source	df	SS	MS	F	P
Between	1	9.19	9.19	0.48	0.50
Within	14	266.25	19.02		
Total	15	275.44			

Ability to Use the Terminal

Means and standard deviations for the number of terminal errors are shown in Table 13. The number of errors (invalid input scores) were analysed using a 3 (Treatment Conditions) x 2 (academic ability) x 2 (sex) ANOVA. There was no significant three-way interaction, were no significant two-way interactions, and the main effects for group and academic ability were not significant (Table 14). A significant main effect for sex ( $P < .05, \omega^2 = .09$ ) occurred because females made fewer errors than males.

Table 13

Means and Standard Deviations of Female/Low,  
 Female/High, Male/Low, and Male/High-Academic Ability  
 Groups for Invalid Input Scores

	Female/Low Means	Standard Deviation	N	Male/Low Means	Standard Deviation	N
Minimal	2.00	0.82	4	4.50	2.65	4
Partial	2.25	1.89	4	4.50	1.29	4
Full	2.25	2.63	4	4.50	3.70	4
	Female/High Means	Standard Deviation	N	Male/High Means	Standard Deviation	N
Minimal	3.75	1.26	4	4.25	1.50	4
Partial	1.75	2.22	4	3.50	0.58	4
Full	4.25	3.70	4	3.75	2.75	4

Table 14

Group by Sex by Academic Ability Analysis of  
Variance Results for Invalid Input Scores

---

Source	df	SS	MS	F	P
Group	2	4.63	2.31	0.49	0.62
Sex	1	25.52	25.52	5.43	0.02
AC	1	0.52	0.52	0.11	0.74
Group by Sex	2	2.54	1.27	0.27	0.76
Group by AC	2	5.54	2.77	0.59	0.56
Sex by AC	1	9.19	9.19	1.95	0.17
G x S x AC	2	2.63	1.31	0.28	0.76
Residual	36	169.25	4.70		
Total	47	219.86			

---

CHOICES Questionnaire

Means and standard deviations for the CQ results are presented in Table 15. Cronbach's coefficient alpha was calculated on the individual items to determine the internal consistency of the questionnaire. The internal consistency was found to be .80. Therefore, the total scores of the questionnaire were analyzed using a 3 (Treatment Conditions) x 2 (academic ability) x 2 (sex) ANOVA. There were no significant main effects, was no significant three-way interaction, and were no significant group x academic ability or group x sex interactions (Table 16). A significant academic ability x sex interaction ( $P < .04$ ,  $\omega^2 = .07$ ) appeared to be due to the low-academic ability female students rating CHOICES to be more helpful than high-academic ability female students, while the opposite result occurred for the male students. The high-academic ability male students found CHOICES more helpful than the low-academic ability male students.

Table 15

Means and Standard Deviations of Female/Low,  
 Female/High, Male/Low, and Male/High-Academic Ability  
 Groups for Total Scores of the CHOICES Questionnaire

	Female/Low Means	Standard Deviation	N	Male/Low Means	Standard Deviation	N
Minimal	24.50	2.65	4	26.25	6.50	4
Partial	23.75	5.91	4	31.25	4.57	4
Full	22.50	5.20	4	28.00	8.29	4

	Female/High Means	Standard Deviation	N	Male/High Means	Standard Deviation	N
Minimal	25.25	4.27	4	22.00	5.29	4
Partial	29.00	6.27	4	26.00	3.56	4
Full	23.25	3.40	4	24.75	4.79	4

Table 16

Group by Sex by Academic Ability Analysis of Variance  
 Results for Total Scores of the CHOICES Questionnaire

---

Source	df	SS	MS	F	P
Group	2	92.17	46.08	1.66	0.21
Sex	1	33.33	33.33	1.20	0.28
AC	1	12.00	12.00	0.43	0.52
Group by Sex	2	38.17	19.08	0.69	0.51
Group by AC	2	6.50	3.25	0.12	0.89
Sex by AC	1	126.75	126.75	4.56	0.04
G x S x AC	2	24.50	12.25	0.44	0.65
Residual	36	1000.50	27.79		
Total	47	1333.92			

---

## Chapter V

### Discussion

The discussion is presented in five sections. The first three sections are devoted to the CMI results, the ability to use the terminal results, and the CQ results. The next section discusses recommendations for the practice of counselling and for future research. The final section discusses the limitations of the present study.

#### Career Maturity

Hypothesis (1) suggested that varying levels of counsellor intervention would produce differences in career maturity. However, this effect was not observed. Varying the degree of counsellor intervention did not produce differential effects in career maturity. Considered as a whole, the statistical analyses suggest that some vocational counselling intervention with the CHOICES program, including minimal counsellor intervention, had an effect on the career maturity of the high-academic ability female students. However, the CHOICES program, regardless of the degree of counsellor intervention associated with it, did not have an effect on the career maturity of the low-academic ability female students or on male students.

Inferred in Hypothesis (1) is a fundamental expectation that receiving some vocational counselling intervention with the CHOICES program (i.e., Treatment Conditions I, II, or III), as opposed to receiving no vocational counselling intervention (i.e., the Control Condition), would produce an effect on career maturity. When this premise was statistically tested, significant differences were found between the Treatment Conditions for the high-academic ability female students and their Control Condition. This was considered qualified support and also includes the three-way interaction of treatment x academic ability x sex for the averaged treatment groups.

The three-way interaction can be interpreted by looking at the sex by academic ability subgroup means (Table 7) and the one-way ANOVA results collapsed over Treatment Conditions for these same subgroups (Tables 9 - 12). The CHOICES program appears to have no effect on the career maturity of the low-academic ability female students and male students. On the other hand, there are notable differences between the Control and Treatment Condition means for the high-academic ability female students. These differences were confirmed by the significant main effect of treatment for the high-academic ability female students (Table 10).

The CHOICES program produced differential effects on career maturity depending on the sex and academic ability

of the students. This result contradicts the findings of Starr (Note 2) who found the CHOICES program to have no differential effects for sex or academic ability on gains in CMI scores. Explanations of these differential effects due to sex and academic ability are proposed in the next two subsections.

Sex Differences. The fact that high-academic ability female students improved their career maturity with the CHOICES program, but low-academic ability females did not increase their career maturity with the CHOICES program, is a differential based on academic ability rather than sex. This finding may be explained by the research of Breedlove and Cicerelli (1974) and Bardwick et al. (1970) who found that high-academic ability female students often experienced a role conflict because they were striving to achieve academically, but also trying to be feminine -- two roles that are often considered (by many people) to be mutually exclusive. Low-academic ability female students are confronted with this role conflict to a much lesser degree because they are less concerned with achieving, and therefore, less concerned with career maturity. Because of their intellectual ability and general orientation toward achieving, it appears that high-academic ability female students are better able to improve their career maturity level with the CHOICES program than low-academic ability female students.

Academic Ability Differences. The fact that high-academic ability female students appear to increase their career maturity after using the CHOICES program while male students do not may be explained by the fact that the male students, including the Control Conditions, appeared to have relatively high levels of initial career maturity, which created a ceiling effect upon which the CHOICES program was unable to improve. An explanation of this finding is offered by Woodcock and Herman (1978) who suggested that females are less prepared for career exploration than males, and should therefore be provided with special career education to bring them up to the level of their male counterparts.

In summary, the high-academic ability female students alone scored higher than their Control Condition. Thus, the CHOICES program had an effect on the career maturity of only twenty-five percent of the students in the present study.

#### Ability to Use the Terminal

Statistical analysis of the data gave no support for Hypothesis (2). Students receiving different levels of counsellor intervention did not differ in their ability to use the CHOICES terminal efficiently, as measured by their error rate. However, females made fewer errors than males.

This difference in error rate based on sex may be

understood through the findings of researchers investigating sex differences in reflectivity and impulsivity. In reviewing the literature on reflectivity and impulsivity, Messer (1976) concluded that males were more impulsive, which could account for their higher error rate on the CHOICES terminal, due to their lack of forethought in responding. Females, on the other hand, are generally found to be more reflective and, therefore, may have made fewer errors on the CHOICES terminal because they thought more about their actions before they responded.

#### CHOICES Questionnaire

Hypothesis (3) was also not supported by statistical analysis of the data. Contrary to the findings of Sampson (1977) and Sampson and Stripling (1979) that suggested structured counsellor intervention was usually rated as more beneficial, students receiving different levels of counsellor intervention did not rate the experience of using the CHOICES program differently as assessed by the CQ.

The interaction of sex and academic ability, meaning that the students rated their experience differently depending on both their sex and academic ability, was not hypothesized, but was significant and can be interpreted by looking at the means. Although all subgroups perceived the CHOICES program to be at least "somewhat useful", which was a relatively positive endorsement, the low-academic ability

female students and the high-academic ability male students perceived using the CHOICES program to be a more beneficial experience than the high-academic ability female students and the low-academic ability male students.

This interaction of sex and academic ability was probably a result of a multiplicative effect. In other words, even though the range of mean scores for the four groups was low (1.6 - 1.9 invalid inputs), because the two groups that scored highest and the two groups that scored lowest were both categorically different on both factors, an interaction effect was produced.

Previous studies that surveyed the subject's perception of the experience of using the CHOICES program did not differentiate on the basis of sex or academic ability; consequently, it is not possible to make comparisons about the results of the present study and those of past studies on those specific factors. However, similar to the results of Wright (1981), Cassie et al. (1979), and Guerette (Note 1), students enthusiastically used the CHOICES program and, as previously stated, they indicated their interaction with the CHOICES program was, at least, "somewhat useful".

The significant sex x academic ability interaction meaning that the degree of perceived value was highest for the low-academic ability female students and high-academic ability male students is in direct opposition to the CMI

results. The correlation between total scores on the questionnaire and the CMI scores was low ( $r = -.08$ ) suggesting that there is little relationship between students' perceptions of the usefulness of the CHOICES program and career maturity. Basically, this indicates that the CQ, as a subjective measure of the value of CHOICES, does not accurately predict a subject's career maturity. And, possibly that the Attitude Scale of the CMI as a dependent measure is not sensitive to change produced by the activities provided in the CHOICES program.

The lack of correlation between the CMI scores and the subjective perceptions of the CHOICES program may be better understood by comparing the specific purpose of each measure. The Attitude Scale of the CMI measures career maturity by assessing true or false responses to statements about choosing a career. The statements are predominantly concerned with selecting an appropriate career by considering dimensions relevant to job satisfaction and realistic expectations. These dimensions include: (1) involvement in the choice process, (2) orientation toward work, (3) independence in decision-making, (4) preference for career choice factors, and (5) conceptions of the choice process. Assessment of these dimensions evaluates how concerned the subject is about making an appropriate vocational choice (Zunker, 1982). In other words, to attain a higher CMI score, one would have to agree with

statements that suggested that making a satisfactory vocational choice is important and that it is a result of realistic decision-making based on self-awareness of personal interests and limitations.

The CQ is also a measure of verbal behaviour, it measures fundamentally different perceptions than the CMI. To clarify exactly what attitudes the questionnaire reflects, it is necessary to reconsider the primary objectives of the CHOICES program because the CQ surveyed perceptions of the experience of working with CHOICES program.

The primary objective of the CHOICES program is to present fast, comprehensive career information, thereby relieving the counsellor of the time-consuming task of disseminating information, and allowing for more time to be spent in vocational counselling (Employment and Immigration Canada, 1978). Wright (1981) proposed that the role of the counsellor would become increasingly important in guiding students in the use of the CHOICES program and in discussing or interpreting information obtained from the system. Considering the allotment of counsellor time in the CHOICES program Treatment Conditions in the present study, most of the counsellor's time was spent in instructing the students in preparation for using the terminal. The post-counselling session offered a brief opportunity for the counsellor to actually provide

vocational counselling related to clarifying goals, exploring needs, developing a plan of action or any other non-information related activity. Therefore, the main emphasis of the CHOICES program provided in this study (which was representative of the service provided in most secondary schools), was predominantly information oriented, as opposed to being process oriented.

It is important to note, however, that implicit in the experience of using the CHOICES program is the possibility that, indirectly, the students will enhance aspects of their career maturity. But, it would be presumptuous to assume that the CHOICES program provides explicit instruction related to selecting a vocation on the basis of job satisfaction, realistic expectations or any other aspects of career maturity. These may sometimes be legitimate byproducts, but are not directly taught in the CHOICES program.

Therefore, the CMI and the CQ appear to be measuring different factors. However, it should not be expected that the two measures should be correlated or uncorrelated.

In summary, different degrees of counsellor intervention did not produce differential ratings of the CHOICES program. However, the academic ability and sex of the students did interact to produce differential ratings of the CHOICES program. Low-academic ability female students and high-academic ability male students perceived

the experience of working with the CHOICES program to be slightly more useful than the high-academic ability female students and the low-academic ability male students. This result was opposite to the CMI results.

#### Recommendations for Counsellors and Future Research

Career Maturity. The CHOICES program does have an effect on career maturity, depending on the sex and academic ability of the students. However, the degree of counsellor intervention provided in the present study does not appear to have an effect on career maturity. Based on these findings, some tentative recommendations may be made for counsellors and career educators. They are the following: (1) the CHOICES program may be advantageously used to augment the career maturity of high-academic ability female students, (2) in addition, the program may be implemented with a minimum amount of counsellor intervention and still improve the career maturity of high-academic ability female students and (3) the CHOICES program as it was implemented in this study (even with full counsellor intervention), should not be relied upon to have the same effects on the career maturity of all students.

The CHOICES program does provide fast, comprehensive career information, did enhance career maturity of high-academic ability female students and may also have positive effects on aspects of career maturity and vocational decision-making that were not considered in the present

study. It appears that the CHOICES program is a valuable part of the vocational counselling process, however, it should not be expected to have major effects on career maturity without extensive counsellor intervention following the use of the program. It would be worthwhile, therefore, to further study the CHOICES program combined with extensive counselling intervention and its effect on career maturity and vocational decision-making skills.

Future studies should consider investigating the effect of the CHOICES program combined with a more comprehensive vocational counselling intervention on students' career maturity attitudes over longer periods of time. Given the fact that attitudes are generally formed over long periods of time and are usually not readily changed (Baron & Bryne, 1982), it is not unexpected that a short term vocational counselling intervention, such as, the CHOICES program with relatively small amounts of counselling intervention, had no effect on the career maturity attitude of seventy-five percent of the students in the study. Investigation of the effects of a comprehensive vocational counselling intervention should focus on the process oriented interventions covered in the Post-Counselling stage, rather than the training oriented intervention of the Introductory and Explanatory stages. This would provide research data that would further clarify the role of the counsellor in most effectively implementing

the CHOICES program.

A career education course would be a good example of a more comprehensive vocational counselling intervention. Future research should study the effect of the CHOICES program combined with such a course on career maturity attitude and behavioral outcomes related to career education, for example, vocational decision-making ability, knowledge of occupations and awareness of educational options.

It would also be worthwhile to investigate the relationship between the CHOICES program and counsellor intervention on other behavioral outcomes related to career education, for example, decision-making ability, knowledge of occupations and awareness of educational options. In other words, it would be useful to replicate the present study using a variety of dependent measures to investigate other potentially positive effects of the CHOICES program.

#### Ability to Use the Terminal

Ability to use the terminal was chosen as a dependent measure because it lent itself to the exploratory investigation of the effect of degree of counsellor intervention on that variable. The mean number of errors (invalid inputs) for all students regardless of which treatment they received was very low. This is an indication that the subjects generally had little difficulty operating the terminal and that it is relatively easy to teach students

how to operate the terminal. It would not seem worthwhile, therefore, to further study the relationship between counsellor intervention and ability to efficiently interact with the terminal as measured by the subjects error rate. However, simply because students are able to mechanically operate the terminal, counsellors should not assume that the CHOICES program will have generalized effects on career maturity of other related behavioral outcomes.

#### CHOICES Questionnaire

Considering the findings of this study, the implication for counsellors and career educators is that the CHOICES program is a career counselling tool that students will be motivated to use, and will consider the experience of using the program to be beneficial. The fact that students perceive the CHOICES program to be beneficial is valuable from a motivational point of view. However, positive subjective perceptions do not necessarily indicate that objective effects will result. Therefore, the findings of the present survey of students' perceptions and those of past surveys should be considered in this perspective until future research more precisely establishes the effects of the CHOICES program.

Future research of students' perceptions of the value of the CHOICES program should address the question of what students specifically find beneficial about the CHOICES program and include an investigation of the relationship

between perceiving the CHOICES program to be beneficial and career related behavioral outcomes, for example, vocational decision-making ability, knowledge of occupations and awareness of educational options.

#### Limitations of the Present Study

Limitations that likely reduced the statistical significance of the results were the small sample size and the number of experimental conditions being analyzed. A larger sample size would be an asset in terms of statistical significance and would also provide for greater generalizability of the results. It is also possible that there were not sufficient qualitative differences in the three Treatment Conditions to produce larger mean differences in the variable counsellor intervention.

The high-academic ability subjects were originally to be categorized as such if they had attained an "A" average in the previous academic year. However, there were not sufficient grade eleven "A" level students, who had not used the CHOICES program before. Therefore, "B" level students were also used to fulfill the quota of high-academic ability students. This may have had a diminishing effect on mean differences between high- and low-academic ability groups.

It should be acknowledged that the author of the present study was also the counsellor providing the treatment. This may have introduced a threat to the

internal validity of the study in that the counsellor may have subconsciously influenced the results. However, the likelihood of this potential confound occurring was extremely rare because of the structure inherent in the CHOICES program.

Finally, the generalizability of the results of the present study is limited because all data were collected in one secondary school with only grade eleven students. In order to generalize the results to other populations, the study would have to be replicated with a broader range of students in other grade levels and other secondary schools.

## Reference Notes

1. Guerette, J. An assessment of student attitudes towards the use of CHOICES. Paper presented at the World Seminar on Employment Counselling, Ottawa, Canada, September 1980.
2. Starr, D.C.B. An assessment of CHOICES (Department of Educational Psychology M. Sc. Thesis). Unpublished manuscript, University of Calgary, 1978.

References

- Bardwick, J., Douvan, E., Horner, M., & Guttman, D. Feminine personality and conflict. Belmont, California.: Brooks/Cole, 1970
- Baron, R.A. & Bryne, D. Exploring social psychology. 2nd Ed. Boston, Mass.: Allyn & Bacon, Inc., 1982
- Breedlove, C. & Cicerelli, V.G. Women's fear of success in relation to personal characteristics and type of occupation. Journal of Psychology, 1974, 86, 181-190.
- Cassie, J.R.B. The effects of a computer-assisted career information service on the career maturity of Ontario students in grades nine, ten and eleven. (Doctoral dissertation, State University of New York at Buffalo, 1976). Dissertation Abstracts International, 1977, 37, 4856-A (University Microfilms No. 77-3521, 199)
- Cassie, J.R.B., Ragsdale, R.B., & Robinson, M. A comparative analysis of CHOICES and S.G.I.S.: selected aspects on on-line and batch delivery systems for computer-assisted guidance services. Toronto, Ontario: Ontario Institute for Studies in Education, 1979.
- Chapman, W. SIGI Counsellor's Handbook. Princeton, N.J.: Educational Testing Service, 1975.
- Crites, J.O. Proposals for a new criterion measure and research design. In H. Borow (Ed.), Man in a world of work. Boston: Houghton Mifflin, 1964.
- Crites, J.O. Measurement of vocational maturity in adolescence: I. Attitude Test of Vocational Development Inventory. Psychological Monographs, 1965, 79, (2, Whole No. 595).
- Crites, J.O. Theory and research handbook for the Career Maturity Inventory. Monterey, Calif.: CTB/McGraw-Hill, 1973, 1978.
- Crites, J.O. Career counselling. New York: McGraw-Hill, Inc., 1981.

- Employment and Immigration Canada, CHOICES Counsellor's Manual. Ottawa, Ontario, 1978.
- France, M.H., & Sloan, W. CHOICES: a computer-assisted career guidance system. The B.C. Counsellor, 1982, 4, 27-31.
- Ganster, D.C., & Lovell, J.E. An evaluation of a career development seminar using Crites' Career Maturity Inventory. Journal of Vocational Behavior, 1978, 13, 172-180.
- Hansen, J.C. Review of the Career Maturity Inventory. Journal of Counselling Psychology, 1974, 21, 168-172.
- Jarvis, P. CHOICES: A computerized heuristic occupational information and career exploration system. Ottawa: Occupational and Career Analysis and Development Branch, Department of Manpower and Immigration, May 1976.
- Katz, M.R., & Shatkin, L. Computer-assisted guidance: concepts and practices. Princeton, N.J.: Educational Testing Service, 1980.
- Melhus, G.E., Hershenson, D.B., & Vermillion, M.E. Computer-assisted versus traditional vocational counselling with high and low readiness clients. Journal of Vocational Behavior, 1973, 3, 137-144.
- Messer, S.B. Reflection-impulsivity: a review. Psychological Bulletin, 1976, 83, 1026-1052.
- Omwig, C.P., & Thomas, E.G. Sex differences in the career maturity of sixth and eighth grade students. Journal of Vocational Behavior, 1977, 11, 322-330.
- Rayman, J.R., Bryson, D.L., & Day, J.J. Toward a systematic computerized career development program for college students. Journal of College Student Personnel, 1978, 19, 202-207.
- Sampson, J.P., Jr. Counsellor intervention with computer-assisted career guidance. (Doctoral dissertation, University of Florida, 1977). Dissertation Abstracts International, 1977, 38, 3297A. (University Microfilms No. 73-29, 395)

- Sampson, R.J., & Stripling, R.O. Strategies for counsellor intervention with a computer-assisted career guidance system. Vocational Guidance Quarterly, 1979, 27, 230-238.
- Schenk, G.E., Murphy, P.P., & Shelton, R.L. Computerized career information systems on the college campus: A low-cost, do-it-yourself approach. The Personnel and Guidance Journal, 1980, 58, 516-520.
- Shatkin, L. Computer-assisted guidance: descriptions of systems. Princeton, N.J.: Educational Testing Services, 1980.
- Smith, E.D., & Herr, E.L. Sex differences in the maturation of vocational attitudes among adolescents. Vocational Guidance Quarterly, 1972, 20, 177-182.
- Toffler, A. The third wave. New York: Williams Morrow and Co., 1980.
- Wilson, D. Want to know what career may be right for You? Just ask CHOICES! Canadian Vocational Journal, 1979, 15, 13-15.
- Woodcock, P.R., & Herman, A. Fostering career awareness in tenth-grade girls. The School Counselor, 1978, 25, 256-264.
- Wright, A. Discussion paper 01/81 B.C. has a choice. British Columbia: Ministry of Education, Information Services, 1981.
- Zunker, V.G. Using assessment in career counselling. Monterey, California: Brooks/Cole Publishing Company, 1982.

APPENDIX I

CHOICES QuestionnaireInstructions

You have just completed a computer-assisted career guidance program called CHOICES. In order to complete the CHOICES program, you worked with a counsellor and used a computer terminal. Now that you have completed the CHOICES program, please answer the following questions about your interactions with the counsellor, the computer terminal, and the total CHOICES program. Circle the answer that BEST describes your perception of CHOICES.

I. Generally speaking, I found working with the total CHOICES program to be a/an

1. very satisfying experience
2. satisfying experience
3. neutral experience
4. unsatisfying experience
5. very unsatisfying experience

II. How much difficulty did you find in learning to use the computer terminal?

1. very little difficulty
2. little difficulty
3. normal difficulty for learning any new task
4. moderate difficulty
5. a great deal of difficulty

III. The pretraining to learn how to operate the computer was

1. very useful
2. somewhat useful
3. neutral
4. not necessarily useful
5. definitely not useful

IV. In that it increased my knowledge of occupations, my interaction with the counsellor alone was

1. very useful
2. somewhat useful
3. neutral
4. not necessarily useful
5. definitely not useful

V. In that it improved my ability to make vocational decisions, my interaction with the counsellor alone was

1. very useful
2. somewhat useful
3. neutral
4. not necessarily useful
5. definitely not useful

VI. In that it increased my knowledge of occupations, working with the computer terminal was

1. very useful
2. somewhat useful
3. neutral
4. not necessarily useful
5. definitely not useful

VII. In that it improved my ability to make career decisions, working with the computer terminal alone was

1. very useful
2. somewhat useful
3. neutral
4. not necessarily useful
5. definitely not useful

VIII. In that it increased my knowledge of occupations, the combination of interacting with the counsellor and using the computer terminal was

1. very useful
2. somewhat useful
3. neutral
4. not necessarily useful
5. definitely not useful

IX. In that it improved my ability to make career decisions, the combination of interacting with a counsellor and using the computer terminal was

1. very useful
2. somewhat useful
3. neutral
4. not necessarily useful
5. definitely not useful

X. Would you be interested in using CHOICES again in the future?

1. definitely
2. probably
3. I am not certain
4. probably not
5. definitely not

XI. Would most students benefit from working with CHOICES?

1. definitely
2. probably
3. I am not certain
4. probably not
5. definitely not

XII. Do you believe that working CHOICES was useful to you or will be useful to you in making future plans for your education?

1. very useful
2. somewhat useful
3. I am not sure
4. not necessarily useful
5. definitely not useful

XIII. Do you believe that working with CHOICES was useful to you or will be useful to you in making future career decisions?

1. very useful
2. somewhat useful
3. I am not sure
4. not necessarily useful
5. definitely not useful

XIV. Do you believe that working with CHOICES will be useful to you in your discussions with your guidance counsellor?

1. very useful
2. somewhat useful
3. I am not sure
4. not necessarily useful
5. definitely not useful

XV. Do you believe that working with CHOICES will be useful to you in discussions with your parents?

1. very useful
2. somewhat useful
3. I am not sure
4. not necessarily useful
5. definitely not useful

APPENDIX II

Letter to Students

Dear (name inserted)

September 28, 1982

You have been selected as a potential participant in a study designed to investigate the effectiveness of the CHOICES program that is currently available in your school. A counsellor from the University of Victoria will be providing the CHOICES program to grade eleven students willing to participate in the study.

To participate in the study and use the CHOICES program, you must be willing to attend the following meetings: 1) two training sessions that will be held in groups of sixteen students during two separate lunch hours, 2) a one hour, individual session on the computer terminal that will be booked during any class time you choose, and 3) a one hour individual counselling session, also to be booked during any class time you choose. During a portion of the individual counselling session, you will be asked to complete the Attitude Scale of the Career Maturity Inventory and a questionnaire surveying your perceptions of the usefulness of the CHOICES program.

Please return the page attached to your homeroom teacher if you are interested in using the CHOICES program by participating in this research program. Thank you for your co-operation in conducting this study. I sincerely hope I can be of service to you. If you have any questions, please contact myself, Peter Williams (384-1765), or Mr. Cornell, in the general office.

Yours Truly,



Peter Williams

Name \_\_\_\_\_

Have you used the CHOICES program in the past?

Yes          No    (circle one)

Are you interested in participating in this study of the  
CHOICES program?

Yes          No    (circle one)

VITA

Surname: Williams Given Names: Peter

Place of Birth: Edmonton, Alta. Date of Birth: August 23, 1951

Educational Institutions Attended, with Dates of Entering  
and Leaving:

University of Victoria, B.C. 1973 to 1975

University of Victoria, B.C. 1978 to 1983

Degrees, Diplomas, Etc., Awarded, with Dates and Names of  
Institutions:

B. Ed. 1981 University of Victoria, B.C.

Honours and Awards:

University of Victoria Graduate Fellowship, 1982 - 1983

University of Victoria Staff Associateship, 1981 - 1982

University of Victoria President's Scholarship for

Part-time Students, 1980

Publications:

\_\_\_\_\_  
\_\_\_\_\_

PARTIAL COPYRIGHT LICENSE


I hereby grant the right to lend my thesis or dissertation (the title of which is shown below) to users of the University of Victoria Library, and to make 'single copies only' for such users or in response to a request from the library of any other university, or similar institution, on its behalf or for one of its users. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by me or a member of the University designated by me. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Title of Thesis/Dissertation

The Impact of CHOICES as a Function of Counsellor

Intervention, Academic-ability and Sex

Author

  
Signature

Peter Williams

Name (typewritten)

6 - 13 - 83

Date