

NATIONAL SCIENCE FOUNDATION
INDUSTRY/UNIVERSITY
COOPERATIVE RESEARCH CENTERS

FINAL

**1997-1998 Process Outcome
Survey Results**

Descriptive Statistics
Compiled from
Industry and Faculty Surveys

JUNE 1999

D. O. GRAY / S. TARANT / J. M. RUDOLPH
DEPARTMENT OF PSYCHOLOGY
NORTH CAROLINA STATE UNIVERSITY

**NOTE: PLEASE DO NOT QUOTE OR CITE WITHOUT
PERMISSION OF THE AUTHORS**

CONTENTS

OVERVIEW

Data Set	2
Report Processing	3
Data Coding Problems	3

INDUSTRY DESCRIPTIVES

Table 1: Interest in Research	4
Table 2: Satisfaction with Research	5
Table 3: Follow-On Research	5
Table 4: Technical Benefits	6
Table 5: Other Benefits	6
Table 7: General Evaluation	7
Table 8: Member Information	8
Table 9: Membership Information	8

FACULTY DESCRIPTIVES

Table 10: Research Program	10
Table 11: Knowledge Production	11
Table 12: Investigator Outcomes	12
Table 13: Perceived Industry Benefits	13
Table 14: Satisfaction	14

OVERVIEW

DATA SET

CENTERS

	<i>Industry</i>	<i>Faculty</i>
Population	55	55
Available Sample	42	42
Sample	37	32
Population Response Rate	67%	58%
Available Response Rate	88%	76%

INDIVIDUALS

	<i>Industry</i>	<i>Faculty</i>
Population	752	551
Available Sample	557	445
Sample	291	236
Population Response Rate	39%	43%
Available Response Rate	52%	53%

REPORT PROCESSING & DATA CODING Problems

This report provides basic descriptive statistics on the evaluator process/outcome Questionnaire. Data was collected during the fall of 1998, referencing activity for FY 1997-1998.

Since most evaluators use this report to benchmark their center compared to a program-wide "norm," we have reported "center-level" means and standard deviations. Center-level means are an *unweighted* aggregate mean: means for each center were used to calculate a center-level mean.¹ Center-level means and standard deviations can be used to determine a center's performance relative to other centers. Because questions which required a numeric answer (e.g., number of dollars) often demonstrated a highly skewed distribution, we also report medians for these variables. For forced choice questions, frequencies and standard deviations are based on individual respondents are also reported.²

One question on the industry survey (#6: the number of new projects supported by industry and the dollar value of these research projects) warranted being reported in two ways: (a) based on all respondents, and (b) based only on respondents who reported at least one project.

INDUSTRY RESULTS: 1997-98

TABLE 1: INTEREST IN RESEARCH

1) What percentage of Center research projects do you take an active interest in?

0-19% (1)		20-39% (2)		INDIVIDUAL FREQUENCIES				80-100%(5)		CENTER LEVEL	
N	%	N	%	40-59% (3)		60-79%(4)		N	%	MEAN	S.D.
46	16.6	81	29.2	73	26.4	42	15.2	35	12.6	2.78	.73

3) How long, on average, do you feel that it should take for a new Center research project to yield tangible results? number of months:

CENTER LEVEL	
MEAN	S.D.
17.00	8.62

TABLE 2: SATISFACTION WITH RESEARCH PROGRAM

4) During the past year, how satisfied were you with the following features of the Center's research program?

	INDIVIDUAL FREQUENCIES										CENTER LEVEL	
	Not Satisfied 1		Slightly Satisfied 2		Somewhat Satisfied 3		Quite Satisfied 4		Very Satisfied 5		MEAN	S. D.
	N	%	N	%	N	%	N	%	N	%		
a Capabilities of faculty and graduate students	1	0.4	3	1.1	42	14.7	153	53.7	86	30.2	4.15	.35
b Breadth of the research topic covered	3	1.0	10	3.5	76	26.9	148	51.7	48	16.8	3.81	.41
c Focus of the research	3	1.0	19	6.6	92	32.1	136	47.4	37	12.9	3.65	.47
d Technical quality of the research	2	0.7	5	1.8	55	19.4	151	53.2	71	25.0	4.04	.37
e Innovative quality of the research	3	1.0	17	6.0	96	33.8	129	45.4	39	13.7	3.68	.40
f Relevance of research to my organization's <i>short term</i> (1-2 years) needs	10	3.5	47	16.5	103	36.3	91	32.0	33	11.6	3.34	.45
g Relevance of research to my organization's <i>long term</i> (3+ years) needs	2	0.7	24	8.4	88	30.8	115	40.2	57	19.9	3.70	.42

TABLE 3: FOLLOW-ON RESEARCH

6) During the past year, approximately how many center-stimulated research projects were supported by your organization (include projects contracted to outside performers)? Please estimate the dollar value of all center-stimulated research projects.

	CENTER LEVEL					
	# of projects/ member MEAN	MEDIAN	S. D.	Total dollar value of/ member MEAN	MEDIAN	S. D.
a New research projects supported by <i>your organization</i> Total Sample (N of members = 257 , N of Centers = 41)	1.62	1.25	1.35	329,733	126,818	594,292
b New research projects supported by <i>your organization</i> At Least One Project (N of members =164 , N of Centers = 23)	2.76	2.00	2.45	539,337	199,286	872,787
c Average project cost At Least One Project (N of members =164 , N of Centers = 23)				212,621	79,167	336,595

TABLE 4: TECHNICAL BENEFITS

7) During the past year, to what extent has participation in the Center contributed to the following technical benefits for your organization?

	INDIVIDUAL FREQUENCIES												CENTER LEVEL	
	No Impact 1		Slight Impact 2		Moderate Impact 3		High Impact 4		Very High Impact 5		Not Applicable N/A		MEANS	S. D.
	N	%	N	%	N	%	N	%	N	%	N	%		
<i>Research and Development</i>														
A Increased our general technical awareness and/or capabilities	9	3.1	28	9.7	112	38.9	107	37.2	29	10.1	3	1.0	3.52	.81
b Accelerated or improved existing research projects	39	13.6	65	22.7	94	32.9	63	22.0	13	4.5	12	4.2	3.08	.71
c Stimulated new research projects	57	19.9	73	25.4	86	30.0	49	17.1	7	2.4	15	5.2	2.88	.77
d Contributed to development of intellectual property within my organization	80	28.1	68	23.9	78	27.4	36	12.6	9	3.2	14	4.9	2.72	.86
<i>Commercialization</i>														
e Improvements to <i>existing</i> products, processes or services	83	29.0	63	22.0	84	29.4	39	13.6	3	1.0	14	4.9	2.69	.85
f Development of <i>new</i> products, processes, or services	94	33.0	71	24.9	73	25.6	27	9.5	7	2.5	13	4.6	2.56	.94
g Improved sales and/or profitability	138	48.4	62	21.8	36	12.6	14	4.9	2	0.7	33	11.6	2.66	1.03
h Created or helped maintain jobs in your organization	147	51.6	54	18.9	34	11.9	14	4.9	3	1.1	33	11.8	2.60	.97

TABLE 5: OTHER BENEFITS

10) During the past year, to what extent has participation in the center contributed to the following other benefits for your organization?

	INDIVIDUAL FREQUENCIES												CENTER LEVEL	
	No Impact 1		Slight Impact 2		Moderate Impact 3		High Impact 4		Very High Impact 5		Not Applicable N/A		MEANS	S. D.
	N	%	N	%	N	%	N	%	N	%	N	%		
a Enhanced your ability to recruit talented students	112	39.3	46	16.1	54	18.9	30	10.5	16	5.6	27	9.5	2.74	1.08
b Improved cooperation with scientists and technical resources outside your organization	30	10.4	39	13.5	112	38.8	78	27.0	22	7.6	8	2.8	3.25	.65
c Improved cooperation with other Center members	40	13.9	57	19.9	99	34.5	63	22.0	19	6.6	8	2.8	3.03	.75
11) During the past year, how many students trained in the Center research projects were hired by your organization?													0.52	1.35
													students hired:	

TABLE 6: CENTER ADMINISTRATION & OPERATIONS12) During the past year, how *satisfied* were you with the following features of the Center's administrative operations?

	<u>INDIVIDUAL FREQUENCIES</u>										<u>CENTER LEVEL</u>	
	<u>Not Satisfied</u> 1		<u>Slightly Satisfied</u> 2		<u>Somewhat Satisfied</u> 3		<u>Quite Satisfied</u> 4		<u>Very Satisfied</u> 5		<u>MEAN</u>	<u>S. D.</u>
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>		
a Communication between Center staff and your organization	8	2.8	22	7.7	58	20.4	137	48.2	59	20.8	3.75	.50
b Center-related proposals, reports, and publications (e.g. quality and timeliness)	7	2.5	28	10.0	77	27.5	135	48.2	33	11.8	3.54	.46
c Planning and development of the research program (e.g. new projects, changes in research areas)	7	2.5	28	10.1	101	36.3	116	41.7	26	9.4	3.47	.46
d Management of ongoing research projects	6	2.2	18	6.5	71	25.7	151	54.7	30	10.9	3.66	.44
e Project selection process	10	3.6	23	8.3	81	29.3	125	45.3	37	13.4	3.57	.51
f Technology transfer activities	14	5.4	43	16.7	94	36.4	81	31.4	26	10.1	3.24	.63
g Center fundraising (e.g. member recruitment, grant-writing)	15	5.7	26	10.0	94	36.0	90	34.5	35	13.4	3.30	.66
h Management of intellectual property issues	14	5.4	24	9.3	93	36.2	99	38.5	26	10.1	3.31	.53

TABLE 7: GENERAL EVALUATION

14) To what extent are you generally satisfied with the operation and activities of the Center?	<u>INDIVIDUAL FREQUENCIES</u>										<u>CENTER LEVEL</u>	
	<u>Not Satisfied</u> 1		<u>Slightly Satisfied</u> 2		<u>Somewhat Satisfied</u> 3		<u>Quite Satisfied</u> 4		<u>Very Satisfied</u> 5		<u>MEAN</u>	<u>S. D.</u>
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>		
	5	1.8	14	4.9	74	26.1	151	53.2	40	14.1	3.75	.43

15) Will your organization renew its membership?	<u>INDIVIDUAL FREQUENCIES</u>										<u>CENTER LEVEL</u>	
	<u>Definitely Not</u> 1		<u>Probably Not</u> 2		<u>Uncertain</u> 3		<u>Probably Yes</u> 4		<u>Definitely Yes</u> 5		<u>MEAN</u>	<u>S. D.</u>
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>		
	9	3.2	12	4.2	41	14.4	149	52.3	73	25.6	3.92	.38

TABLE 8: MEMBERSHIP INFORMATION18) Which one of the following industrial categories best describes your division's *primary* research area?

	N	%	<u>INDIVIDUAL FREQUENCIES</u>			N	%	
			N	%				
Food	6	2.1	Primary metals	6	2.1	Electrical, electronic, or communication equipment	44	15.5
Textiles or apparel	2	0.7	Fabricated metals	6	2.1	Professional or scientific instruments	13	4.6
Lumber, wood, or furniture	2	0.7	Machinery	4	1.4	Surgical or medical supplies	9	3.2
Paper	2	0.7	Motor vehicles	11	3.9	Other manufacturing	28	9.9
Chemical	44	15.5	Other transportation	3	1.1	Health services	9	3.2
Petroleum	10	3.5	Aircraft or missiles	7	2.5	Mining	11	3.9
Rubber	0	0.0	Munitions	5	1.8	Building or construction	7	2.5
Stone, clay, or glass	19	6.7	Other military equipment	9	3.2	Other non-manufacturing	26	9.2

TABLE 9: MEMBERSHIP INFORMATION

19) Years organization has been a member of the Center:

	<u>INDIVIDUAL FREQUENCIES</u>	
	N	%
1) 0-1 years	58	21.8
2) 2-3 years	72	27.1
3) 4-5 years	49	18.4
4) 6-7 years	28	10.5
5) 8 or more years	58	21.8

20) Organization is:

	<u>INDIVIDUAL FREQUENCIES</u>	
	N	%
1) For-Profit (Large)	162	59.8
2) For-Profit (Small)	18	6.6
3) Non-Profit / Government	42	15.5
4) For-Profit (Unspecified)	49	18.1

21) Which functional group pays for your organization's membership in this Center?: [multiple responses allowed; N reflects responses not respondents]

	<u>INDIVIDUAL FREQUENCIES</u>	
	N	%
1) Corporate	65	28.5
2) Research	103	45.2
3) Development	28	12.3
4) Engineering	35	15.4
5) Product Development	19	8.3
6) Manufacturing	19	8.3
7) Marketing/Sales	5	2.2
8) Other	15	6.6

22) Which of the following best describes your estimate of your division/organization's financial status for next fiscal year?:

	<u>INDIVIDUAL FREQUENCIES</u>	
	N	%
1) Significant budget cuts	28	12.8
2) Modest budget cuts	70	32.1
3) Stable budget	91	41.8
4) Modest budget increases	25	11.5
5) Significant budget increases	3	1.4

FACULTY RESULTS: 1997-98

TABLE 10: RESEARCH PROGRAM

1) Compared to the research projects which you typically conduct outside the Center, would you describe your Center-funded research as:

		INDIVIDUAL FREQUENCIES										<u>CENTER LEVEL</u>	
		<i>Much more basic</i>		<i>More basic</i>		<i>Same</i>		<i>More applied</i>		<i>Much more applied</i>			
		1	2	3	4	5							
		N	%	N	%	N	%	N	%	N	%	MEAN	S. D.
a)		1	0.4	25	11.0	96	42.1	91	39.9	15	6.8	3.38	.41
		<i>Much broader in scope</i>		<i>Broader</i>		<i>Same</i>		<i>Narrower</i>		<i>Much narrower in scope</i>		<u>CENTER LEVEL</u>	
		1	2	3	4	5							
		N	%	N	%	N	%	N	%	N	%	MEAN	S. D.
b)		7	3.1	45	19.8	106	46.7	58	25.6	11	4.8	3.02	.83
		<i>Much longer time frame</i>		<i>Longer</i>		<i>Same</i>		<i>Shorter</i>		<i>Much shorter time frame</i>		<u>CENTER LEVEL</u>	
		1	2	3	4	5							
		N	%	N	%	N	%	N	%	N	%	MEAN	S. D.
c)		9	4.0	24	10.6	79	34.8	91	40.1	24	10.6	3.41	.55

TABLE 11: KNOWLEDGE PRODUCTION

	<u>CENTER LEVEL</u>		<u>CENTER LEVEL</u>		<u>CENTER LEVEL</u>	
	<u>Total number</u> <u>MEANS</u>	<u>S. D.</u>	<u>Number with</u> <u>member</u> <u>scientists</u> <u>MEANS</u>	<u>S. D.</u>	<u>Number with</u> <u>students</u> <u>MEANS</u>	<u>S. D.</u>
3) During the past year:						
a) How many publications in the open literature have you had based on Center research?	2.29	2.73	1.55	2.08	3.01	3.06
b) How many presentations have you made at conferences or professional meetings based on Center research?	3.15	2.85	1.38	2.14	3.00	2.43
	<u>Number</u> <u>completed</u> <u>during last year</u> <u>MEAN</u>	<u>S. D.</u>	<u>Number still in</u> <u>progress</u> <u>MEAN</u>	<u>S. D.</u>		
c) How many theses/dissertations based on Center research are under your supervision?	0.84	.72	1.90	2.08		
2) How long, on average, do you feel that it should take for a new Center research project to yield tangible results?						<u>CENTER LEVEL</u>
						<u>MEAN</u>
						<u>S. D.</u>
						17.14
						4.77

TABLE 12: INVESTIGATOR OUTCOMES

4) What impact has participation in the Center had for YOU in the following areas?	INDIVIDUAL FREQUENCIES										CENTER LEVEL	
	Very negative impact 1		Moderately negative impact 2		No impact 3		Moderately positive impact 4		Very positive impact 5		<u>MEANS</u>	<u>S. D.</u>
	N	%	N	%	N	%	N	%	N	%		
a Opportunities for consulting	0	0.0	1	0.4	122	53.7	84	37.0	20	8.8	3.57	.42
b Opportunities for research contracts	0	0.0	2	0.9	47	20.5	123	53.7	57	24.9	4.06	.40
c Access to equipment	0	0.0	1	0.4	99	43.4	81	35.5	47	20.6	3.80	.43
d Trust & confidence in industry	1	0.4	3	1.3	66	29.3	104	46.2	51	22.7	3.94	.38
e My evaluation of the quality of industrial research	1	0.4	9	4.0	81	35.8	94	41.6	41	18.1	3.77	.42
f Chances for promotion, tenure, and/or salary increases	2	0.9	5	2.2	113	50.0	74	32.7	32	14.2	3.58	.48
g Amount of interaction with other faculty	1	0.4	3	1.3	29	12.8	134	59.0	60	26.4	4.14	.32
h Ability to support graduate student thesis/dissertation research	1	0.4	1	0.4	43	18.9	100	44.1	82	36.1	4.17	.48
i Amount of autonomy in conducting research	2	0.9	24	10.6	99	43.6	76	33.5	26	11.5	3.48	.49
j Ability to publish research in a timely fashion	0	0.0	17	7.5	130	57.5	47	20.8	32	14.2	3.48	.44

TABLE 13: PERCEIVED INDUSTRY BENEFITS

5) During the past year, how much of on impact do you believe YOUR RESEARCH had on the following technical benefits for Center members?	<u>INDIVIDUAL FREQUENCIES</u>											<u>CENTER LEVEL</u>		
	No Impact 1		Slight Impact 2		Moderate Impact 3		High Impact 4		Very High Impact 5		Not Applicable N/A		<u>MEANS</u>	<u>S.D.</u>
	N	%	N	%	N	%	N	%	N	%	N	%		
a Research and development efforts	11	4.8	39	17.2	80	35.2	62	27.3	20	8.8	15	6.6	<u>3.67</u>	<u>.77</u>
b Commercialization of products, processes, and/or services	58	25.1	51	22.9	55	24.7	29	13.0	13	5.8	19	8.5	<u>3.02</u>	<u>.92</u>

TABLE 14: SATISFACTION

7) During the past year, how <i>satisfied</i> were you with the following features of the Center?	<u>INDIVIDUAL FREQUENCIES</u>										<u>CENTER LEVEL</u>	
	Not Satisfied 1		Slightly Satisfied 2		Somewhat Satisfied 3		Quite Satisfied 4		Very Satisfied 5		<u>MEANS</u>	<u>S. D.</u>
	N	%	N	%	N	%	N	%	N	%		
a Quality of the research program	2	0.9	8	3.6	44	19.6	114	50.9	56	25.0	<u>4.01</u>	<u>.41</u>
b Relevance of the research program to industry's needs	1	0.4	10	4.5	30	13.5	111	50.0	70	31.5	<u>4.15</u>	<u>.35</u>
c Center administration and operations	6	2.7	11	4.9	38	17.0	98	43.9	70	31.4	<u>3.94</u>	<u>.42</u>

TABLE 15: BACKGROUND

9) What is your academic rank?	<u>INDIVIDUAL FREQUENCIES</u>	
	N	%
1) Assistant Professor	27	11.9
2) Associate Professor	56	24.8
3) Full Professor	112	49.6
4) Other	31	13.7

0a) Are you tenured?	<u>INDIVIDUAL FREQUENCIES</u>	
	N	%
1) Yes	154	68.1
2) No	71	31.8

10b) If NO, are you in a tenure track position?	<u>INDIVIDUAL FREQUENCIES</u>	
	N	%
1) Yes	28	42.4
2) No	38	57.6