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9. ABSTRACT
For this examination, a causal model was developed and tested relating cooperative/pre-cooperative membership to formal education as mediated by exposure to mass media and knowledge about cooperative organizations. Exposure to mass media, especially newspapers, was found to be an essential factor in the causal chain. The relationship between cooperative/precooperative membership and individual fishing technology was ambiguous. Nevertheless, it was noted that these organizations do provide some essential marketing services as well as equipment. There also was some indication that cooperative/precooperative members manifest a slightly better material style of life. Further, the proposition that a cooperative functions to deal with the uncertainties of the fishermen's occupational life was supported in several instances. Cooperative/precooperative members were found to be more positive toward the occupation of fishing than non-members. Additionally, they appeared to be less uncertain about their future status. Overall, findings suggest that the cooperative/precooperative fishermen's organizations in Panama have no negative effect on the small-scale fishermen; in general, the effects of these organizations seem to be positive.

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Correlates of Fishermen's Cooperative Membership in the Republic of Panama

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Correlates of Fishermen's Cooperative Membership in the Republic of Panama

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INTRODUCTION The fishermen's cooperative has been viewed by many as being the ideal organizational form for use in the development of small-scale fisheries. FAO (1971) notes that in addition to governmental and international organizations, the fishermen themselves often think of forming a cooperative when their situation is unsatisfactory. Gersuny and Poggie (1974) argue cogently that a cooperative can function as an organization which deals with the uncertainties of the fishermen's occupational life. They point out that collective action can be used to buffer, level, and anticipate environmental impacts. The cooperative buffers environmental influences by providing the organized fisherman with the means to provide essential services and goods (e.g. ice-making equipment, marketing specialists, etc). It levels environmental factors by reducir the effects of fluctuations in production or consumption (e.g. through the use of cold-storage facilities, marketing information, and transportation). Finally, it minimizes uncertainty through anticipation of, and preparation for, certain contingencies such as equipment loss or sickness. It does this through provision of insurance or welfare funds.

One would therefore expect that such organizations would have profound effects on the life-styles of their members. The fishermen themselves believe that the cooperative is a source for equipment, marketing services, and funds (Pollnac & Ruiz-Stout 1976). It would thus be revealing to compare cooperative

and non-cooperative members with regard to a wide range of variables. For example, we expect that cooperative members would have access to better equipment, manifest a superior material style of life, and have a positive temporal perspective. We also expect that they would be more positive toward the occupation of fishing than non-members. The purpose of this paper is to examine the interrelationships between fishermen's cooperative membership and several of these sociocultural, psychological, and technological variables in the Republic of Panama.

METHODS

SAMPLE Data for this report are based on interviews with 153 fishermen conducted in seven major areas in the Republic of Panama: (1) La Playita, Colon; (2) Chorillo, Panama City; (3) Farallon; (4) The Azuero Peninsula; (5) Remedios; (6) Pedregal; and (7) Puerto Armuelles (see Figure 1). A brief description of these areas is provided as a context for the discussion of the effects of fishermen's cooperative membership which follows.

La Playita forms part of the city of Colon on the east bank of Bahia de Limon at the Caribbean entrance to the Canal 49 miles from Panama City. Colon is a modern port with a population of 67,695 and all the facilities one would expect in a modern city. The community of La Playita consists of small, usually one or two room houses constructed from scrap lumber. It is located on the beach and is composed, primarily, of descendants of people from the West Indies who emmigrated to Panama to work on the Canal. English is spoken in most homes, but many are also fluent in Spanish. Sanitary facilities and water are centrally located and electricity is available. Mass media (radio, TV, newspapers, magazines, and cinema) are readily available in both English and Spanish.

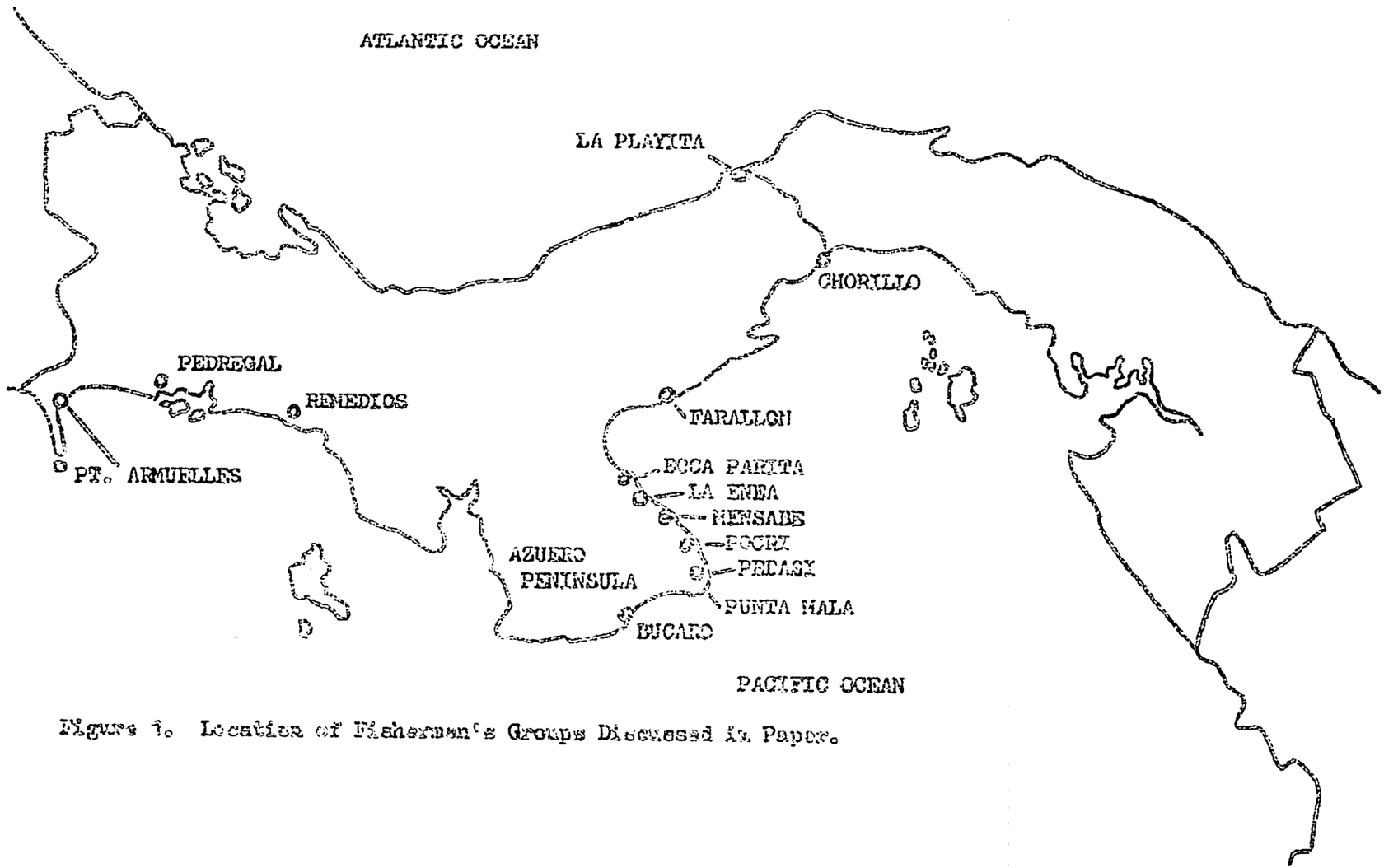

Figure 1. Location of Fishermen's Groups Discussed in Paper.

A railroad and a modern highway link Colon with Panama City.

The fishermen of La Playita are organized into a cooperative (Cooperativa de Pescadores de la Playita). They began to organize as a club of fishermen in 1943 and gradually developed into the present organization with little outside help. They attained full cooperative status in 1973. The cooperative operates out of several wooden buildings in La Playita: a fish shop, office, and meeting room. The fish shop is equipped with a scale, electric light, and ice chest. The cooperative owns several boats, motors, and nets which rotate among the fishermen. Fishing is conducted primarily with hand lines.

Chorillo is located in the far southwest corner of Panama City (population 348,704) adjacent to the Canal Zone. Housing in this older area of Panama consists primarily of two-story wooden apartments with central toilet facilities. Electricity service is readily available and all mass media are present in both English and Spanish, with Spanish being the prevalent language. An extensive public transportation network connects Chorillo with the rest of Panama City.

Some of the fishermen of Chorillo are members of a fishermen's cooperative which was formed in 1965. The cooperative owns some equipment which is used by members who need it. It operates out of a substantial, cement block building located on the beach where the catch is landed. The cooperative building contains a selling location with running water, fish cleaning area, electricity, freezing plant, ice machine, cold rooms, and equipment storage rooms. A UNFAO drying machine is used to dry shark which is packaged in plastic bags and distributed throughout Panama. Fishing is primarily done with hand lines or gill nets from wooden dugouts with outboard motors.

Farallon is located on the Gulf of Panama approximately 120K from Panama City. Local population concentrations include San Carlos (26K, Pop. 1408),

Rio Hato (2K, pop. 5409), Anton (12K, pop. 5321), and Penonome (29K, pop. 7345). The community of Farallon consists primarily of fishermen, some personnel who work on the nearby National Guard Base, and weekend vacationers. Most fishermen live in small wooden houses constructed on pilings either on the beach or just over the dunes from the beach. Sanitary facilities are most frequently latrine pits separate from dwellings. Electricity and a public water supply is present but most fishermen obtain water from centrally located stand pipes. Some fishermen grow food on small holdings adjacent to their houses, while some maintain agricultural plots outside the community. With regard to mass media, TV and radio stations can be received at Farallon. Newspapers and magazines are available, but more difficult to obtain than in the urban areas. No cinema is available.

The fishermen of Farallon were at one time organized into a cooperative which failed due to organizational problems and was taken over by the government. The plant, presently operated by the government, provides some equipment for fishermen and markets their products. The plant has an ice machine, cooling rooms, fish cleaning tables, running water, a selling location, and several vehicles for product distribution. Fishing is done with either nets or handlines from outboard motor powered dugout or fiber glass boats.

The Azuero Peninsula extends southward into the Pacific Ocean between the Gulfs of Montijo and Panama. Research in this area was conducted in three major regions: (1) Boca Parita; (2) La Enea; and (3) Mensabe-south around Punta Mala to Bucaro. Boca Parita is a small, primarily fishing community located 5 Kilometers from Chitre (pop. 12,379) and 251 Kilometers from Panama City. Most houses are adobe or cement block with tin roofs. Electricity and water service are both available. Sanitation facilities are generally located outside the

dwelling. Almost all fishermen from Boca Partia have small subsistence farms. All mass media are readily available in Chitre which is easily reached by foot or public transportation.

The fishermen of Boca Parita are organized into a cooperative which has had some organizational difficulties and was being run by the National Guard in March 1975. The cooperative owns some fishing equipment (boats, motors, gill nets), a substantial building with running water, electricity, cleaning tables, cold storage tanks, and a selling location. Fishing is generally done from dugout or fiber glass boats with handlines and nets. Corrals are also used at Boca Partia.

La Enea (pop. 532) is located approximately 24K south of Chitre and 1.5K from Guarare (pop. 1138). The other major population center nearby is Las Tablas (6K, pop. 4488). Most dwellings at La Enea are cement block or adobe with tin or tile roofs. Both electricity and water service are available. Most fishermen also operate small farms which seasonally produce a majority of their food. All fishermen have a source of income other than fishing because of the marked seasonality of fishing in this region. The primary alternative source of income is derived from working in the salinas (salt evaporation ponds). TV and radio reception is good, newspapers and magazines are more difficult to obtain than in Chitre, and there is no cinema. Public transportation (bus and taxi service) is available.

The fishermen of La Enea are organized into a precooperative which possesses some fishing equipment (2 boats, motors, and gill nets), a building in town and one at the landing site, cold storage chests, and electric service. Fishing is primarily conducted with handlines and nets.

Mensabe-south around Punta Mala to Bucaro is treated as a distinct area

because of the nature of the fishing conducted. Areas where fish can be caught are highly seasonal, and fishermen move to locations where fish are available. Most fishermen maintain permanent residences in one of the small towns in the area, but some are truly migratory, moving the household to where the fish are. Those who keep a home in one of the small towns go to fish for one or two weeks, return to their families for a short periods, and then return to fish. Both types of fishermen were interviewed, and those who maintained permanent town residences came from La Candalaria, Pocri, and Pedasi. The government owned and operated plant at Mensabe has boats, nets, and motors which are used by some of these fishermen. This plant also has cold storage facilities, an ice machine, and vehicles which are used to distribute fish. La Candalaria is a very small, primarily agricultural town. House types are generally adobe with tile roofs. Electricity is not available except at a small shop which has a generator. A water tower has been erected and sanitary water is available. All fishermen do some farming as well as fishing. Except for a TV set located at the shop with the generator, the only readily available mass media is the radio. Public transportation in the form of a collective taxi connects Candalaria with Las Tablas. Fishermen are not organized, and they fish using dugout canoes with motor or fiber glass boats from the government plant at Mensabe which is located just across the river. Pocri and Pedasi are both small towns respectively located 18 and 36 kilometers south of Las Tablas. House types are generally adobe with tile or tin roofs and running water and electricity are available. Fishermen usually plant small gardens in addition to their fishing activities. Readily available mass media are limited to TV and radio. It takes a special effort to obtain current newspapers and magazines, and there is no cinema in either town. Both towns are served

by small busses and taxis. There are no fishermen's organizations and the fishermen use either privately owned dugouts with motor or motorized fiber glass boats from the government plant at Mensabe. Fishing is usually conducted with handlines. Lobster nets are also used.

Remedios is located just south of the Pan American Highway approximately 95K from David (pop. 36,089) and 110K from Santiago (pop. 21,896). Houses are generally constructed of adobe, cement block or cane. Electricity and water services are available. Most fishermen also keep small farms. Radio and TV reception is good, but newspapers and periodicals require more effort to obtain than in larger population centers. There is no Cinema in Remedios. Small busses provide public transportation linking Remedios with the rest of Panama. There is no fishermen's organization at Remedios at the present time, but a precooperative existed for a brief period in 1973-1974. The few fishermen at this location fish with nets and handlines from fiberglass boats with outboard motors.

Pedregal (pop. 6,539) is located approximately 6 kilometers south of David on a river which empties into the north central part of Chiriqui Gulf. There is easy access to the Pan American Highway which passes through David. The airport at David has regular service to Panama City. House types in Pedregal include cane thatch, wood, adobe, and cement block. Electricity and running water are available, but most fishermen obtain water from wells or stand pipes. Sanitary facilities are usually located outside the dwelling. All mass media are readily available in David. Fishermen at Pedregal are now formed into a precooperative which has almost no facilities. Fishing, for the most part, is conducted from motor powered, dugout canoes with handlines. Some nets are in use.

Puerto Armuelles is located at the northwest end of the Gulf of Chiriqui on the Pacific Coast, approximately 500 kilometers by paved road from Panama City. It functions as port and supply center for the banana plantations of this sector of Panama. Approximately 30,000 people associated with the banana plantations live within 30 kilometers of Puerto Armuelles. Puerto Armuelles is connected to the wage earners in the various banana fincas by a network of all weather dirt roads, suggesting a potentially good market for fish products. In addition to the paved road which connects it to other sections of Panama, there is a thirty-six inch narrow gauge railroad system (Ferrocarril Nacional de Chiriqui) connecting David and Puerto Armuelles with spur lines to Potreillos, Pedregal, and San Andres. Additionally, Puerto Armuelles has an airport with daily flights to Panama City and a pier for banana boats. All mass media are readily available. House types in Puerto Armuelles are for the most part wooden. Electricity and running water are available. Both a fishermen's precooperative and a fishermen's corporation formed at an earlier date failed due to equipment failure and organizational difficulties. Most fishermen in Puerto Armuelles use dugout canoes without motors and handlines.

Distribution of the sample across the seven areas described above can be found in table 1.

Table 1. Geographical Distribution of Sample

LOCATION	FREQUENCY
Chorillo, Panama	14
La Playita, Colon	36
Farallon	25
Azuero Peninsula	33
Remedios	07
Pedregal	22
Puerto Armuelles	16

TESTS Cooperative or Precooperative membership was measured by response to a direct question. Years of membership was also determined. Fishing technology used was determined from responses to a check list including vessel size, type and age; motor horsepower and age; and use of various net types, handlines, etc. Material style of life was measured using a check list of household items. Other sociocultural variables (e.g. education, exposure to mass media) were measured with the use of direct questions. Attitudes toward fishing were determined by content analyses of open ended questions (cf. Pollnac & Ruiz-Stout 1975). Temporal perspective was measured with the use of economic gratification questions (e.g. if you were to inherit 1000 dollars, what would you do with it?) and a ladder of life test (cf. Cantril 1963). The ladder of life test consisted of showing the respondent a ladder diagram with ten rungs. He was told that the top rung represented the best possible life and the bottom, the worst. He was then requested to tell us where he stood on the ladder at the present time, five years ago, and where he thought he would stand five years from today.

At La Playita interviews were conducted in either Spanish or English depending upon the language the respondent was most familiar with. In all other areas the questions were posed in Spanish.

ANALYSIS AND DISCUSSION

COOPERATIVE MEMBERSHIP Forty-eight percent of the 153 fishermen interviewed are either cooperative or precooperative members. Table 2 presents frequency of membership across the seven major areas in the sample.

Table 2. Distribution of Cooperative/Precooperative Membership Across the Seven Areas Sampled.

	Cooperative/Precooperative	
Area	Member	Non-member
Chorillo, Panama	09	05
La Playita, Colon	31	05
Farallon	00	25
Azuero Peninsula	17	16
Remedios	00	07
Pedregal	16	06
Puerto Armuelles	00	16
TOTAL	73	80

As can be seen in Table 2, in areas where fishermen's cooperatives are operating, the majority of fishermen interviewed report themselves as being members. When non-cooperative/precooperative members were asked why they did not join, the most frequent answer (46%) was that there was no cooperative operating in the area where they fish. Other reasons given for non-membership concern a desire to be independent, feelings that no benefits could be gained from membership, or complaints about lack of equipment, ill feelings among members, etc. Thirty-four percent of the non-members had belonged to a fisherman's organization in the past. Most frequent rationales for leaving include internal problems in cooperative management (39%), cooperative equipment failure (19%), dissolution of group (19%), and 'personal reasons' (19%).

EXPOSURE TO MASS MEDIA, FORMAL EDUCATION, AND COOPERATIVE MEMBERSHIP The exposure to mass media variable was measured by requesting individual fishermen to

indicate the number of times per week they read newspapers and magazines, watch television, and listen to the radio. Frequency of exposure to each of these four mass media were summed, forming a scale of total exposure. The analysis of this data can be found in Table 3.

Table 3. Cooperative precooperative Membership and Exposure to Mass Media.

	Weekly Frequency ($\bar{X}$)					
Media	Non-members	Members	F Ratio	d.	f.	p
1. Read Newspapers	1.84	2.67	3.606	1	151	>0.05
2. Watch Television	1.95	2.78	3.662	1	151	>0.05
3. Listen to Radio	5.40	4.80	1.941	1	151	>0.05
4. Read Magazines	0.98	1.58	3.255	1	151	>0.05
5. Media Exposure Scale	10.16	11.82	3.695	1	151	>0.05

Although the results in Table 3 are not statistically significant, it can be seen that there is an overall tendency for cooperative members to be more exposed to the mass media than non-members. The relatively weak relationships might be the result of a variable intervening between media exposure and cooperative/precooperative membership.

In an earlier paper we reported a significant relationship between knowledge about fishermen's cooperative organizations and newspaper reading and television watching (Pollnac and Ruiz-Stout 1976). Focusing on exposure to newspapers, which had the highest correlation with the lack of knowledge about fishermen's cooperative scale ($r=0.35$, $p<0.01$), it is possible to posit and test a simple causal model: First, the more formal education an individual has, the more likely it will be that he will read newspapers; Second, the

greater the frequency that one reads newspapers, the more likely it will be that he will be exposed to information concerning fishermen's cooperatives, either in the newspapers or other printed material; Third, the more information a person has concerning a cooperative, the more likely it will be that he will either form or join one. The intercorrelations between these variables can be found in Table 4, and the simple causal model which reflects their interrelationships is depicted in Figure 2. The correlations between the variables can also be found in parentheses adjacent to the arrows connecting the variables.

Table 4. Interrelationships between Variables related to Mass Media Exposure and Fishermen's Cooperative Membership.

		1	2	3	4
1.	Education	---	0.42*	0.15	0.05
2.	Newspaper Reading		----	0.35*	0.15
3.	Knowledge about Cooperatives			----	0.48*
4.	Cooperative/Precooperative Member				

N = 153 * = $p < 0.01$

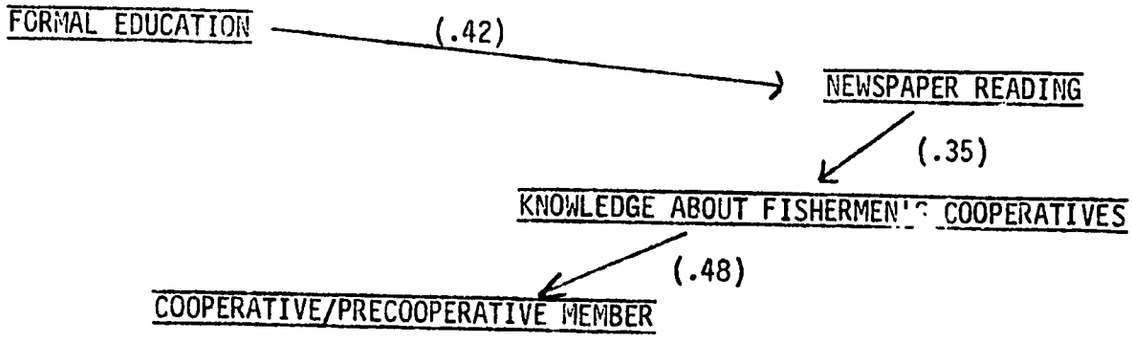

Figure 2. Model Depicting Proposed Causal Relationships between Variables related to Mass Media Exposure and Cooperative/Precooperative Membership.

A causal model, such as that presented in Figure 2 can be tested using a variety of techniques. A technique based on partial correlations (Blalock 1964) is used here because the dependent variable is dichotomous, and the use of Beta weights as path coefficients would be questionable. This technique predicts that if the causal model depicted in Figure 2 is acceptable, the following relationships should exist:

1. $r_{13.2} = 0.0$
2. $r_{24.3} = 0.0$
3. $r_{14.23} = 0.0$

In Table 5 predicted and actual relationships are presented.

Table 5. Predictions and Degrees of Fit of Mass Media Exposure- Cooperative/ Precooperative Membership Model.

	Expected	Actual
$r_{13.2}$	0.0	0.004
$r_{24.3}$	0.0	-0.022
$r_{14.23}$	0.0	0.013

As can be seen in Table 5, differences between the actual and predicted partial correlations are insignificant. It should be noted, however, that we have not completely established the validity of the model--the situation wherein all arrows are reversed would lead to identical predictions. Nevertheless, despite its mathematical acceptability, the situation in which the arrows are reversed is not a realistic theoretical alternative. We therefore suggest that the model presented in Figure 2 is both theoretically and mathemat-

ically acceptable and tentatively present it as depicting the relationship between formal education, mass media exposure, and cooperative membership.

This model is also important because it helps explain the unexpected lack of significant relationships between formal education and knowledge about cooperative organizations which was reported in an earlier paper (Pollnac & Ruiz-Stout 1976). This model suggests that exposure to mass media, what Rogers (1969) refers to as the "magic multiplier," acts as an intervening variable. Thus, until exposure to mass media is taken into account, the indirect relationships between formal education and knowledge or acceptance of an innovation (here the cooperative) could be obscured.

COOPERATIVE MEMBERSHIP AND ATTITUDES TOWARD FISHING If a fishermen's cooperative functions as an organization which helps fishermen deal with occupational uncertainties as Gersuny & Poggie (1974) have argued, we would expect cooperative/precooperative members to have more positive attitudes toward their occupation than non-members. Fishermen were asked what they disliked about fishing, and approximately 50 percent responded that there was nothing they disliked (Pollnac & Ruiz-Stout 1975). Fifty-nine percent of the cooperative/precooperative members made this positive response in contrast to only 41 percent of the nonmembers. This difference is statistically significant ($X^2 = 4.758$, $\phi = 0.176$, $p<0.05$), thus supporting our expectations.

If the occupation of fishing is perceived more favorably by cooperative/precooperative members, we might also expect that they would have positive attitudes towards their sons becoming fishermen. This hypothesis, however, is not supported by the data. Fifty-six percent of the nonmembers and 45 percent of the cooperative/precooperative members report that they would like it if their sons became fishermen--a difference that is not statistically

significant (X^2 = 1.697, $p>0.05$). This probably reflects the fact that a father's aspirations with regard to his son's occupation takes into account more factors than merely positive or negative attitudes toward the occupation. Pollnac and Ruiz-Stout (1975) demonstrate that both areas of residence and formal education are related to this variable, suggesting that knowledge of possible alternatives affects a father's occupational aspirations for his son. Nevertheless, the analysis has supported the hypothesis that cooperative/precooperative members maintain a more positive perception of the occupation of fishing than nonmembers.

COOPERATIVE MEMBERSHIP AND FISHING TECHNOLOGY As was noted in the introduction and in an earlier paper, (Pollnac & Ruiz-Stout 1976) the fishermen perceive cooperative organizations as being a source of equipment. Fishermen's cooperatives doubtless provide their members with access to needed technologies. As was noted in the discussion of the sample, many of the organizations maintain some marketing facilities and provide a limited amount of equipment such as nets, boats, and motors which are used by some members or rotate to all. The purpose of this section however is to examine the extent to which cooperative membership affects the technology of the individual fisherman.

Turning first to boats and motors, we find that 36 percent of the cooperative/precooperative members and 30 percent of the nonmembers own the boat they use for fishing. This difference is not statistically significant (X^2 =1.744, $p>0.05$). It is interesting to note, however, that 50 percent of the cooperative/precooperative members fish from a boat older than the sample mean ($\overline{X}$ = 5.6 years). This contrasts with only 24 percent of the nonmembers--a statiscally significant difference (X^2 = 6.110, $p<0.02$). This difference, however, may be due to the fact that a larger proportion of the cooperative/precooperative

members know their vessel's age (63 versus 48 percent). Boat material and length for members and nonmembers can be found in Tables 6 and 7.

Table 6. Vessel Material.

	Cooperative/precooperative	
Material	nonmembers	members
Iron	--	02
Fiberglass & Wood	03	04
Fiberglass	23	03
Dugout (wood)	54	61
No boat	00	03
TOTAL	80	73

Table 7. Vessel Length.

	Cooperative/precooperative	
Length (Feet)	nonmembers	members
Missing	07	06
06-10	--	04
11-15	04	02
16-20	17	25
21-25	15	22
26-30	36	12
31-35	01	--
36-40	--	01
41-	--	01

At first glance, it appears that nonmembers have access to better technology in the form of larger, fiberglass boats. This difference is not quite so striking, however, if one takes into account the fact that of the 23 nonmembers who fish from fiberglass boats, 12 are from Remedios and Farrallon where pre-existing fishermen's organizations were instrumental in introducing this advanced technology. Further, 11 are from Mensabe and south on the Azuero Peninsula where some fishermen use the fiberglass boats provided by the government plant at Mensabe. Since most of the fiberglass boats are in the 26-30 foot range, this distribution also accounts for the high frequency of boats in this range used by nonmembers.

Seventy-four percent of cooperative/precooperative members and 76 percent of nonmembers use mechanized vessels. Modal horsepower is 20 and modal age of motors is three years for both members and nonmembers. Differences between the two groups are not statistically significant.

Finally, other types of fishing equipment used are compared in Table 8.

Table 8. Fishing Equipment Employed by Cooperative/Precooperative Members and Nonmembers.

	Cooperative/Precooperative	
Equipment	Nonmembers	Members
Hook and Line	52	60
Traps	00	01
Cast Net	08	28
Monofilament Gill Net	36	36
Multifilament Gill Net	02	10
Beach Net	02	06
Lobster Net	05	01
Barrier Net	05	00

COOPERATIVE MEMBERSHIP AND MATERIAL STYLE OF LIFE If fishermen's cooperatives are improving the lot of small-scale fishermen we would expect cooperative members to manifest a material style of life superior to that of nonmembers. Material style of life was measured from responses to a check list which contained various material items. These items and their distributions can be found in Table 9.

Table 9. Cooperative/Precooperative Membership Cross-Tabulated with Selected Material Items.

	Cooperative/Precooperative			
Item	Nonmember	Member	X^2	p (one-tailed)
Own House	79%	66%	3.237	<0.05
Indoor Plumbing	33%	26%	0.770	>0.05
Electricity	38%	66%	12.192	<0.001
Radio	75%	70%	0.505	>0.05
Television	23%	37%	3.858	<0.05
Refrigerator	23%	27%	0.490	>0.05
Sewing Machine	29%	27%	0.035	>0.05
Indoor Toilet	18%	15%	0.165	>0.05

N = 153

Table 9 indicates that the results are statistically significant in the expected direction in only two cases: electricity and television ownership. In one case, house ownership, the results are significantly the opposite of our predictions. Nonetheless, the fact that more cooperative/precooperative

members than nonmembers have electricity suggests a superior material style of life on their part, of which television ownership is only one example. Electric lights and other appliances which were not included on the check list are also implied, or at least their potential is indicated. Cooperative/precooperative membership thus appears to significantly affect the material style of life of its members, probably through increased earnings resulting from the organization's dealing with environmental uncertainties as discussed above.

TEMPORAL PERSPECTIVE AND COOPERATIVE MEMBERSHIP There are several aspects of temporal perspective which may be related to cooperative membership. First, membership in a cooperative or precooperative does not always provide immediate rewards. The member finds that he is paying dues for future benefits: a dividend at year's end, access to better equipment in the future, etc. This suggests that cooperative members may be more willing to defer gratification than nonmembers, to invest for future benefits (cf. Pollnac, Gersuny, & Poggie 1975). Second, if a cooperative organization functions to deal with uncertainties in fishermen's lives, we would expect members to have a more positive perception of the future than nonmembers who are daily faced with these uncertainties without mediating influences. These two aspects of temporal perspective were measured by the economic gratification and ladder of life tests respectively.

Turning first to gratification behaviour, respondents were asked two questions:

(1) If you were to suddently receive $200 as a gift or inheritance, what would you do with it?

(2) If you were to suddenly receive $1000 as a gift or inheritance, what would you do with it?

Responses to these questions were coded as reflecting a deferred gratification pattern if they reflected a future rather than an immediate gain (e.g. invest in fishing equipment, business, agriculture, bank, etc.). Other responses (e.g. buy a house, automobile, etc.) were coded as immediate. Table 10 compares deferred economic gratification response frequencies for members and nonmembers.

Table 10. Economic Gratification Patterns and Cooperative/Precooperative Membership.

	Cooperative/Precooperative				
	Nonmembers	Members	X^2	p	N
Do With $200 (% Deferred)	63	71	0.816	>0.05	123
Do With $1000 (% Deferred)	66	60	0.518	>0.05	152

As can be seen in Table 10, members and nonmembers do not differ significantly with regard to proportion of deferred responses. At least 60 percent of both groups provide deferred responses to both questions. It has been argued elsewhere that certain factors associated with the occupation of fishing result in a deferred orientation on the part of fishermen: e.g. periodicity of income and small-scale entrepreneurship (Pollnac, Gersuny, and Poggie 1975). The data presented here appear to support these findings and suggest that factors such as cooperative membership have little to do with deferred gratification orientations.

Finally, turning to perception of the future, this variable was measured with the use of the ladder of life test. This test is a self-anchoring scale devised by Cantril (1963). Respondents are shown a ladder diagram with ten

rungs. They are told that the top rung represents the best possible life and the bottom the worst. They are then requested to indicate where they stand on the ladder at the present time, five years ago, and five years in the future. Results of the analysis of this data can be found in Table 11.

Table 11. Comparisons of Mean Position on Ladder of Life for Members and Nonmembers of Fishermen's Cooperatives.

	MEAN POSITION Cooperative/Precooperative					
Time	Nonmembers	Members	F	d.	f.	p
5 Years Ago	3.75	3.19	1.461	1	149	>0.05
Today	4.70	4.66	0.007	1	151	>0.05
5 Years from Today	8.40	8.59	0.207	1	126	>0.05
(5 Years from Today) - (Today)	3.33	3.81	0.805	1	126	>0.05

Table 11 indicates that there are no significant differences between members and nonmembers with regard to responses to the ladder of life test. Overall, the small-scale fishermen of the Republic of Panama view today as being better than 5 years ago and predict that the future will be even better.

One interesting item did appear in the responses to these questions however. As can be seen in the degrees of freedom column (d.f.) in Table 11, sample sizes varied. This is due to the fact that 25 individuals refused to indicate where they would be on the ladder five years in the future. They made responses such as "Who knows," "God only knows," etc. Responses such as these suggest a feeling of lack of control or uncertainty about the future. If, as was argued by Gersuny and Poggie (1974), a cooperative organization

functions to reduce such uncertainty, we would expect cooperative/precooperative members to be more likely to hazard a guess about their future than nonmembers. An analysis of the data indicates that only 7 percent of the cooperative/precooperative members refused to hazard such a guess in contrast to 25 percent of the nonmembers. This difference is statistically significant ($X^2 = 9.918$, $p<0.01$). It thus appears that cooperative/precooperative members are less uncertain about their futures than nonmembers--a difference that may be a result of the buffering, leveling, and anticipatory functions of cooperative organizations which were discussed in the introduction.

CONCLUSIONS

In sum, we have examined the correlates of fishermen's cooperative membership among small-scale fishermen in the Republic of Panama. A causal model was developed and tested relating cooperative/precooperative membership to formal education as mediated by exposure to mass media and knowledge about cooperative organizations. Exposure to mass media, especially newspapers, was found to be an essential factor in the causal chain. The relationship between cooperative/precooperative membership and individual fishing technology was ambiguous. Nevertheless, it is noted that these organizations do provide some essential marketing services as well as equipment. There was also some indication that cooperative/precooperative members manifest a slightly better material style of life. Further, the proposition that a cooperative functions to deal with the uncertainties of the fishermen's occupational life was supported in several instances. Cooperative/precooperative members were found to be more positive toward the occupation of fishing than nonmembers. Additionally, they appeared to be less uncertain about their future status. Overall, our

findings suggest that the cooperative/precooperative fishermen's organizations in the Republic of Panama have no negative effect on the small-scale fisherman; in general, the effects of these organizations seem to be positive.

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