Cooperation in Pharmacy-Drug Wholesaler Relations

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Objective. The objective of this study was to investigate the associations between characteristics of pharmacy—wholesaler relations and cooperation in those relations.

Design/Sample. Data were obtained from 326 pharmacies about 214 pharmacy-primary wholesaler relations and 112 pharmacy-secondary wholesaler relations.

Measures. Separate multiple regressions were performed to test the hypotheses for both types of pharmacy—wholesaler relationship. For each regression, cooperation was the dependent variable, while the independent variables were customer service level, trust, pharmacy influence, wholesaler influence, and duration of relations.

Results. For primary wholesalers (adjusted R-square = 0.59), three variables had significant associations with cooperation: trust, pharmacy influence, and customer service level. Conversely, the model for secondary wholesalers (adjusted R-square = 0.60) showed that only trust and pharmacy influence were significantly related to cooperation.

Conclusions. Trust and perceived pharmacy influence are important to all wholesalers in fostering and maintaining cooperation from their customers. In addition, level of customer service is an important variable for primary wholesalers working to develop cooperation with their customers.

Within a dynamic business environment, cooperation between trading partners can be crucial for success (1–2). Cooperation between trading partners has become strategically important in today's pharmaceutical marketing channels. Mergers and buyouts have occurred at virtually all levels of the channels, as managed care organizations have exerted significant influence on the delivery of care. To compete with the newly formed organizations, channel members have looked to other firms as partners, to maintain access to patients, to strengthen operations, and to broaden product offerings. Two channel members that have worked to improve cooperation are pharmacies and drug wholesalers.

Drug wholesalers and pharmacies have worked together to develop services that can help both parties, including electronic inventory management, buying group contract administration, in-store computer kiosks, and voluntary chain programs. Initiatives requiring even greater cooperation between pharmacies and drug wholesalers are being developed. For example, drug wholesalers are working to adapt efficient consumer response (ECR) to pharmaceutical marketing channels. The initiative, termed efficient healthcare consumer response (EHCR) will

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require close cooperation among members in the channel, especially wholesalers and pharmacies. Also, disease management programs are being developed for implementation in pharmacies. Many drug wholesalers are working to assist their pharmacy customers to participate in these programs. It is likely that an understanding of cooperation between pharmacies and drug wholesalers will help assure the success of these initiatives.

The goal of this study was to learn more about cooperation between pharmacies and drug wholesalers. First, we discuss the nature of cooperation between firms. Second, we hypothesize associations between cooperation and characteristics of pharmacy-wholesaler relations. Third, we test the hypotheses with data from pharmacy ratings of pharmacy-wholesaler relations. Finally, we discuss the implications of the results to pharmacy-drug wholesaler relations.

LITERATURE REVIEW

Cooperation

Cooperation refers to actions taken by trading partners (e.g. drug wholesalers, pharmacies) in which they work together to achieve mutual goals, in addition to individual goals (1,3). Cooperation allows firms to find means of: 1) coordinating their planning, communicating, and decision making and 2) arranging the payoff structure so that each firm can justify joint goals using their own criteria (4). Cooperation can be viewed as the process in which firms pursue their own goals and thus retain autonomy, while at the same time orienting their actions toward joint outcomes.

The underlying rationale for cooperation is that joint efforts can lead to outcomes that exceed those that a single firm could achieve alone (3,5). Through interaction, the firms become aware of opportunities for mutual gain that stem from each other's capabilities. To convert such opportunities to successful enterprise, the firms involved must be able to coordinate activities so that mutual and individual goals can be achieved.

As conceptualized here, cooperative behaviors include working together to coordinate logistic activities between wholesalers and pharmacies. Indeed, varying levels of electronic ordering and other data exchange have become common in pharmacy-wholesaler relations, as the parties have worked to remove cost from the inventory management process. In addition, resolving disagreements through joint problem solving is a sign of cooperation (6). Joint problem solving involves efforts to identify remedies acceptable to both parties. In summary, cooperation between pharmacies and drug wholesalers refers to coordinated actions (e.g. integration via technology; joint problem solving) that allow each to pursue their own goals, as well as mutual goals.

Virtually all pharmacies utilize a drug wholesaler as a supplier for at least some products. Many pharmacies use more than one drug wholesaler to supply their pharmaceuticals. A common arrangement is to have a primary drug wholesaler and one or more secondary wholesalers. Primary wholesalers provide the majority of products and often a high service level (7). Services provided by a primary wholesaler can include management services (e.g. accounting systems support, third party claims processing, pharmacy records support) and marketing services (e.g. display and merchandising assistance, promo-

tional programs). Thus, interactions between pharmacies and their primary wholesalers are regular and can be multi-faceted.

In contrast, secondary drug wholesalers typically furnish fewer products and lower service levels than primary drug wholesalers. Also, interactions are irregular, and usually focus on the purchase and delivery of a small order. Because of these differences, pharmacy operations are more integrated with their primary wholesalers than with their secondary wholesalers.

Nevertheless, cooperation is important in all pharmacy—wholesaler relations in order to achieve the coordination necessary for survival, given the pressure on operating margins for both parties. Because differences exist between primary wholesaler and secondary wholesaler roles, it is likely that the influences on and the level of cooperation in pharmacy-primary drug wholesaler relations differ from those between pharmacies and secondary drug wholesalers. Given this assumption, we develop and test hypotheses for pharmacy-primary drug wholesaler relations and for pharmacy-secondary drug wholesaler relations.

Development of Hypotheses

Customer Service Level

In interfirm buyer-seller relations, the parties develop expectations of the activities to be performed by each (8). The degree to which the seller performs those activities has been referred to as customer service levels (4). Three categories of customer service have been discussed: pretransaction elements, transaction elements, and posttransaction elements (9). Pretransaction elements occur prior to actual transactions and include activities such as sales presentations and negotiation of terms of exchange. Transaction elements are those directly associated with delivery of the product to the customer (e.g. system accuracy, timing). Posttransaction elements are activities that occur after a product has been sold, such as warranty support, return of goods, and usage reports.

When a wholesaler provides high levels of service to a pharmacy, the pharmacy is likely to cooperate. The wholesaler services allow the pharmacy to meet its goals, while addressing goals shared with the wholesaler. For example, a pharmacy may want products available when needed for dispensing to patients, with minimal time as inventory (i.e. just-in-time). The wholesaler cooperates by agreeing to provide daily delivery and does not impose a minimum order size. The two firms have oriented themselves to reducing stocks levels in the channel, yet both also can try to achieve their own goals (e.g. achieve a certain market share or profit level).

Empirical support for this logic is provided by a positive pathway from relationship benefits to cooperation reported between retailers and their suppliers (1). That is, expectations of benefits from the relationship were associated with cooperation between the trading partners. Because primary drug wholesalers often provide a significant amount of goods and services to a pharmacy, the likelihood of notable benefits deriving from such a pharmacy-wholesaler relation is high. In contrast, secondary drug wholesalers have a minor role as a pharmacy supplier, which should be associated with lesser relationship benefits. Thus, we assume that secondary wholesalers typically would create benefits insufficient for an association between customer

service level and cooperation to exist. Following this approach, we posit the following.

H1a: The customer service level provided by a *primary* wholesaler to a pharmacy is associated positively with the cooperation between the parties.

H1b: The customer service level provided by a *secondary* wholesaler to a pharmacy is not associated with the cooperation between the parties.

Trust

Though trust has been studied in settings that include interpersonal relationships (10), buyer-seller relationships (11–12), and the industrial structure of the United States (13), the most common conceptualization of trust is as a condition or characteristic of a social system (12,14). In buyer-seller relationships, the social system involves parties engaged in exchange. Within pharmacy-wholesaler relations, the parties often exchange current behavior for future behavior by one or more parties, such as delivery or payment. Such time asymmetries create risk for the party that has not had its interests satisfied. For example, Wholesaler A may be awaiting payment from Pharmacy B for a shipment already received by B. Wholesaler A exhibits trust because the risk taken depends on the performance of Pharmacy B. Similarly, a pharmacy incurs some risk after ordering goods, often relying on next day delivery from the wholesaler. If the parties exchange items of readily determined value, then contracts may be able to reduce the risk. However, if the exchanged items are difficult to value (i.e. assistance in solving a product quality problem), contracts will be less likely to deal with the situation and trust can help reduce the perceived risk.

Within the simple exchange dyad just described, each party has expectations about the other's behavior (e.g. each will uphold its side of the exchange terms). Two expectations specific to a given interfirm relation comprise trust between the firms. The first is an expectation that another (i.e. trading partner) will provide technically competent role performance (15). The competent performance expected may involve specialized knowledge, technical skill, or routinized service. Trust as this type of expectation is well-recognized and relates to the party's reliability, expertise, and credibility (11–12,16).

The second type of expectation comprising trust is that others will meet their fiduciary obligations (15). This means that parties will demonstrate concern for another's interests above their own. Expectation of fiduciary obligation means that a party can expect another to avoid opportunistic behavior (17). Expectations that another will meet fiduciary obligations is based on the attributed benevolence and strength of moral duty of the trustee (18). These expectations can be important if one party has less technical expertise than the other, such as a wholesaler selling an automated inventory management system to a pharmacy. Based on this discussion, we define trust as the expectation that another will provide competent role performance and meet its fiduciary obligations within exchange relations.

Cooperation has been linked to the presence of trust in exchange relations (1,15,19). Research using game theory has identified trust as a basic condition for cooperation (19). In an exchange, one party initially confers some benefits onto another which involves some cost to the giver. The giver then is at risk

of suffering a net loss if benefits are not reciprocated. Thus the initial giver exhibits trusting behavior. The exchange sequence is completed when the recipient cooperates with the giver by reciprocating the provision of benefits. Thus, the initiation and maintenance of sequential cooperative exchange requires trusting behavior by at least one party.

In a study of relationships between automobile tire retailers and suppliers, Morgan and Hunt (1) reported a significant pathway from trust to cooperation. Pharmacy relations with both types of drug wholesalers (i.e. primary, secondary) involve some risk taking due to time asymmetries and the just-in-time nature of many pharmacy inventory systems. Thus, we predict that trust will be important for cooperation with both primary and secondary drug wholesalers. Based on this argument, we hypothesize:

H2a: The trust present in pharmacy-*primary* wholesaler relations is associated positively with the cooperation between the parties.

H2b: The trust present in pharmacy-*secondary* wholesaler relations is associated positively with the cooperation between the parties.

Pharmacy Influence and Wholesaler Influence

Influence refers to a firm's ability to affect another's decision making and overt behavior (20). In dyadic interfirm relations, both parties possess some measure of influence on the other. Axelrod (5) showed that a precursor of cooperation is reciprocity. That is, the parties must be able to reciprocate both favorable and unfavorable behavior. Such ability to reciprocate stems from a firm's influence. By exerting its influence to reciprocate a trading partner's behavior, a firm creates the basis of cooperation.

When a firm believes that it can influence a trading partner sufficiently to maintain its own interests, the likelihood of cooperation is improved (4). An ability to influence a trading partner will enhance a party's motivation to contribute to the relations with that partner (21–22). Thus, when a wholesaler or a pharmacy believes it can influence the other, it is more likely to cooperate. The influencing party will be comfortable in cooperating, because it concludes that its behavior will be reciprocated. Because they can have a considerable impact on pharmacy operations, primary drug wholesalers are assumed to have at least moderate influence on their pharmacy customers. Similarly, pharmacies who agree to using a primary wholesaler will gain some influence on that wholesaler. However, due to irregular and narrow-focused interactions, we assume that secondary drug wholesalers and their pharmacy customers exert little influence on each other. Using this logic, we propose the following hypotheses.

H3a: The pharmacy influence in pharmacy-*primary* wholesaler relations is associated positively with the cooperation between the parties.

H3b: The pharmacy influence in pharmacy-*secondary* wholesaler relations is not associated with the cooperation between the parties.

H4a: The wholesaler influence in pharmacy-*primary* wholesaler relations is associated positively with the cooperation between the parties.

H4b: The wholesaler influence in pharmacy-*secondary* wholesaler relations is not associated with the cooperation between the parties.

Duration of Relations

Duration of relations refers to the length of time that trading partners have been engaged in relations with each other. As the duration of interfirm relations increase, the trading partners gain more experience with each other. A popular approach for modeling interfirm relations has been to describe different phases that the relations pass through over time (9,23–24). These models suggest that interfirm relations can become more integrated over time, under the proper conditions.

One limitation of these models is the silence on the mechanisms that drive the relations from one phase to another. Rather, the emphasis has been on describing the characteristics of the various stages. As a proxy to a stage of relationship development, we used duration of relations. Our assumption was that with the passage of time, primary wholesalers and pharmacies will become more interdependent and integrate their operations. These conditions support cooperation between primary wholesalers and pharmacies. However, due to low trade volumes, secondary drug wholesaler-pharmacy relations are less likely to progress to phases characterized by cooperation. Therefore, we state the final hypotheses.

H5a: The duration of pharmacy-*primary* wholesaler relations is associated positively with the cooperation between the parties.

H5b: The duration of pharmacy-*secondary* wholesaler relations is not associated with the cooperation between the parties.

METHODS

Sample and Dyad Under Study

To test our hypotheses, we examined drug wholesaler—pharmacy dyads. In 1994 there were 66,910 pharmacies licensed in the United States (25). This total was composed of: independent (25,298), chain (31,984), hospital (6,267), and other types of pharmacies (3,361). In 1994 there were about 65 active members in the National Wholesale Druggists' Association (26). This industry is concentrated, with the top five firms accounting for over 60 percent of industry sales (27).

Typically, a pharmacy uses a drug wholesaler as a supplier for at least some of its legend drugs and other health-related products. The focus of this study was exchange involving legend drug products. Sales of legend drug products account for about 75 percent of total sales for independent pharmacies and about 30 percent of total sales for chain pharmacies (28). On average, legend drugs account for about 80 percent of total sales for drug wholesalers (27). Based on these figures, it appears that both parties in many pharmacy-drug wholesaler dyads rely heavily on the sales of legend drug products.

A two-stage cluster sample of 600 pharmacies was used. After five states were selected (Connecticut, Florida, Utah, Washington, Wisconsin), a systematic random sample of 120 pharmacies was taken to represent each state. The sample frame was a combination of Hayes Druggist Directory (29) and the American Hospital Association's Guide to the Health Care Field (30). Targeted key informants were pharmacy managers in retail pharmacies and directors of pharmacy in hospital pharmacies.

Data Collection and Analysis

Using a combination of telephone and mail surveys we surveyed pharmacy key informants about their relationship with a drug wholesaler. Prior to the mailing, each pharmacy was contacted by telephone. The purpose of the phone call was threefold. First, we identified the key informant at that site. Second, we informed the pharmacy of the upcoming mailing, which allowed substitution if participation was refused. Third, we collected the name(s) of primary and any secondary suppliers of legend drug products. During the telephone phase, 20 pharmacies refused to participate and were replaced randomly. Sixty percent of the sample was asked to evaluate their primary drug wholesaler, while the other forty percent was asked to evaluate a secondary wholesaler.

The pretested survey booklet was mailed with a personalized cover letter. Respondents were offered a summary of the results. To facilitate return of the booklet, the back cover was stamped and designed for easy return mailing. Two follow-up postcards were mailed as reminders.

Prior to the hypothesis testing, the reliability of the initial measures was assessed using coefficient alpha and item-to-total correlation of measure items. The dimensionality of the multi-item measures was assessed with a confirmatory factor analysis. During this process, items were dropped, due to low item/total correlation or multiple loadings. Then, the refined measures for each construct were compared for primary and secondary wholesalers, with t-tests. Separate multiple regressions were performed, one each for primary wholesalers and for secondary wholesalers. Cooperation was the dependent variable and customer service level, trust, pharmacy influence, wholesaler influence, and the duration of relations were the independent variables. No interactions were tested. The significance of the beta for each independent variable was used to test the hypotheses ($p < 0.05$).

Measures

In addition to the model variables, the survey also measured: the type of pharmacy, the respondents' position and their involvement with drug wholesalers. The aggregate mix of wholesalers evaluated also was determined.

Where available, previously published construct measures were adapted for use in this study. (See the Appendix for the items of the measures.) Customer service level was assessed with four items that asked about how well the wholesaler filled orders, ease of ordering, and timeliness of delivery. Respondents used a 5-point scale (1-Poor 2-Fair 3-Good 4-Very Good 5-Excellent). An overall service level measure was, "Overall, how would you rate the performance of this wholesaler?" (1-Poor 2-Fair 3-Good 4-Very Good 5-Excellent).

To assess trust we used eight items, adapted from a measure by Swan, et al. (31), that evaluated both types of expectations that comprise trust: competent role performance and meeting of fiduciary obligations. Respondents used a 5-point Likert scale to rate their trust of the drug wholesaler (1-Strongly Disagree 2-Disagree 3-Neither Agree nor Disagree 4-Agree 5-Strongly Agree). A global trust item also was used: "We trust this wholesaler." Respondents used a 5-point Likert scale (1-Strongly Disagree 2-Disagree 3-Neither Agree nor Disagree 4-Agree 5-Strongly Agree).

Pharmacy influence and wholesaler influence were measured with single items that asked about the pharmacy's influence on the drug wholesaler and vice versa. Respondents used a 5-point Likert-type scale (1-Not at All Influential 2-Slightly Influential 3-Somewhat Influential 4-Very Influential 5-Totally Influential). A global item asked: "How much power does this wholesaler have relative to your pharmacy?" Respondents used a 5-point scale (1-Wholesaler More Powerful 3-Equal 5-Pharmacy More Powerful).

A single item was used to assess the duration of relations. Respondents were asked, "How long has your pharmacy had this wholesaler as a supplier?" The response was in years. No other item asked about duration of relations.

The measure of cooperation contained four items that asked about working together to solve disagreements, coordinating activities, and pursuing a firm's own goals. These items were adapted from a measure used by Ross and Lusch (32). Respondents used a 5-point Likert scale (1-Strongly Disagree/ 5-Strongly Agree). A global measure asked about cooperation when disagreements arose.

RESULTS

Of the 600 surveys mailed out, 326 were returned in analyzable form, for a 54.3 percent usable response rate. In the absence of actual nonrespondent data, late responders (n=61) were compared to the other respondents on selected variables (33). The two groups were compared using t-tests on the model variables. The two groups did not differ significantly on any of these variables ($p \leq 0.05$).

Respondent Characteristics

Of the 326 responses, 214 (65.4%) evaluated relations with a primary wholesaler, and 112 assessed relations with a secondary wholesaler. The frequency of the types of pharmacies responding were: 154 independent (47.2%), 84 large chain (10 or more units) (25.8%), 44 hospital (13.5%), and 42 small chain (2 to 9 units) (12.9%). Two respondents did not classify their pharmacies. Over 88 percent of the respondents were in the targeted positions (pharmacy owner-manager, pharmacy manager, director of pharmacy). Over 85 percent of the respondents were at least "Somewhat Involved" in daily activities with wholesalers and more than 75 percent of respondents reported at least "Some Influence" in selecting suppliers. These results suggest that the respondents, as a whole, were informed about pharmacy-wholesaler relations.

Twenty-six different drug wholesalers were evaluated. The drug wholesaler evaluated by the most respondents (n = 103) was the drug wholesaler with the largest market share in the industry. Overall, eight wholesalers were evaluated by at least ten respondents. Of the remaining eighteen wholesalers, nine were evaluated by one or two respondents.

Measure Evaluation

For each multi-item measure, an index was created by summing the items comprising that construct. Descriptive statistics (means, medians, standard deviations), reliability, and convergent validity of the measures are shown in Table I.

The Cronbach coefficient alpha reliability for each of the multi-item constructs was acceptable, being above 0.70 (34).

Table I. Mean, Median, Standard Deviation, Reliability, and Convergent Validity of Purified Measures

Variable	Mean	Median	Standard deviation	Cronbach alpha	Convergent validity[b]
Customer Service Level (4)	16.10	17.00	2.57	0.77	0.70^a
Trust (4)	15.71	16.00	2.70	0.86	0.72^a
Pharmacy Influence (1)	2.56	3.00	0.99	na	$0.16^{a,c}$
Wholesaler Influence (1)	2.85	3.00	0.84	na	$-0.33^{a,c}$
Duration of Relations (1)	10.95	8.00	10.70	na	na
Cooperation (4)	15.16	16.00	2.39	0.85	0.41^a

Note: The number of items in each measure is shown in parentheses.
[a] Significant at the 0.05 level.
[b] Pearson correlation with a global measure of same construct.
[c] Pearson correlation with a single item that assessed the power of the pharmacy relative to the wholesaler.

The item/total correlation for the items are shown in the Appendix. The reliability of the single-item measures was not assessed. Evidence for convergent validity was shown by the significant correlations between the multi-item and single-item measures for the constructs. Support for discriminant validity is present because for no pair of constructs does the product of the square roots of coefficient alphas exceed the Pearson correlation between that pair of measures (35). The results of the confirmatory factor analysis show that the three four-item measures (customer service level, trust, cooperation) were unidimensional. Although the overall chi-square was significant ($\chi^{2(51)}$ = 139.27), as might be expected from this test statistic's sensitivity to sample size, other fit indices (goodness of fit [GFI] = 0.92; adjusted goodness of fit [AGFI] = 0.88; root mean square residual [RMSR] = 0.042) suggest unidimensional measures. Table II shows the Pearson correlations among the refined measures.

Comparison of Primary and Secondary Wholesalers

As shown in Table III, relations with primary wholesalers and secondary wholesalers differed significantly on all variables, except pharmacy influence. As expected, primary wholesalers were associated with a higher level of customer service than were secondary wholesalers. Similarly, greater levels of trust and cooperation existed for primary wholesalers. The average duration of pharmacy-primary wholesaler relations was more than two years longer than that of pharmacy-secondary wholesaler relations. Also, the mean influence of primary wholesalers was significantly greater than the mean influence of secondary wholesalers.

Table II. Pearson Correlations Among Purified Measures of Model Variables

	1	2	3	4	5
1) Customer Service Level	—				
2) Trust	0.60^a	—			
3) Pharmacy Influence	0.16^a	0.35^a	—		
4) Wholesaler Influence	0.15^a	0.19^a	0.22^a	—	
5) Duration of Relations	0.03	0.08	−0.05	0.06	—
6) Cooperation	0.51^a	0.75^a	0.39^a	0.25^a	0.07

[a] Significant at $p < 0.05$ level.

Table III. Comparison[a] of Variables for Pharmacy-Primary Wholesaler and Pharmacy-Secondary Drug Wholesaler Relations

Variable	Pharmacy-primary wholesaler relations mean (SEM)[b]	Pharmacy-secondary wholesaler relations mean (SEM)
Customer Service Level[c]	16.45 (0.16)	15.70 (0.28)
Trust[c]	15.96 (0.18)	15.24 (0.27)
Pharmacy Influence[d]	2.59 (0.06)	2.47 (0.10)
Wholesaler Influence[d]	3.06 (0.05)	2.44 (0.08)
Duration of Relations[e]	11.94 (0.79)	9.17 (0.87)
Cooperation[c]	15.60 (0.16)	14.55 (0.24)

[a] T-tests for comparisons of all variables were significant ($p < 0.05$), except Pharmacy Influence.
[b] Standard error of the mean shown in parentheses.
[c] Summed index of four items using a 5-point scale.
[d] Single item using a 5-point scale.
[e] Years.

Influences on Cooperation

As shown in Table IV, both models for cooperation were significant ($p < 0.05$), but differences were present between pharmacy relations with primary wholesalers and those with secondary wholesalers. For primary wholesaler relations (Adjusted R-square = 0.59), three variables showed significant positive associations with cooperation: trust, pharmacy influence, and customer service level. For secondary wholesalers (Adjusted R-square = 0.60), only trust and pharmacy influence showed significant associations with cooperation; customer service level was not associated with cooperation. As hypothesized, wholesaler influence and duration of relations were not significantly associated with cooperation for pharmacy-secondary wholesaler relations. Thus for pharmacy-primary wholesaler relations, hypotheses H1a, H2a, H3a were supported. For relations with secondary wholesalers, hypotheses H1b, H2b, H4b, and H5b were supported.

DISCUSSION AND IMPLICATIONS

The results contribute to our understanding of cooperation between pharmacies and drug wholesalers, as well as buyer-seller interfirm relations in general. The relatively high R-squares suggest that the models did a good job at explaining

Table IV. Regression Models[a] for Cooperation between Pharmacies and Primary and Secondary Drug Wholesalers

Independent variable	Primary Drug Wholesalers		
	Beta	t-value	p-value
Customer Service Level	0.13	2.25	0.03
Trust	0.60	9.97	<0.05
Pharmacy Influence	0.17	3.50	<0.05
Wholesaler Influence	0.09	1.83	0.07
Duration of Relations	0.02	0.51	0.61

[a] F-value for model = 55.68 (p < 0.01); Adjusted R-square = 0.59.

Independent variable	Secondary Drug Wholesalers		
	Beta	t-value	p-value
Customer Service Level	−0.02	−0.18	0.85
Trust	0.70	7.79	<0.05
Pharmacy Influence	0.20	2.70	<0.05
Wholesaler Influence	−0.01	−0.10	0.92
Duration of Relations	0.01	0.09	0.93

[a] F-value for model = 30.07 (p < 0.01); Adjusted R-square = 0.60.

the variation in cooperation levels. The difference in the role of customer service levels for primary wholesalers and secondary wholesalers is apparent. Let's first consider the variables that demonstrated significant associations with cooperation for both types of wholesalers: trust and pharmacy influence.

Trust

Trust had a positive association with the cooperation between pharmacy and wholesaler, regardless of the type of wholesaler. These findings suggest that trust is a basic influence on cooperation. The findings support those reported for other interfirm relations (1) and game theory studies (19).

One set of expectations comprising trust is that another will provide competent role performance. Competent role performance means that a trading partner reliably and consistently renders the activities for which it is responsible within the interfirm relations. Primary wholesalers often have considerable responsibilities to a pharmacy customer (e.g. daily delivery, low out-of-stock rates), compared to a secondary wholesaler. Because of different role performance expectations, secondary wholesalers should be able to generate trust levels comparable to those created by primary wholesalers, but with a narrower scope. Thus, role performance expectations are an important consideration in developing and maintaining trust.

Another aspect of trust is the expectation that an exchange partner will meet its fiduciary obligations or act as a trustee. This means that a drug wholesaler will, at times, put the needs of the pharmacy ahead of its own. Such actions make it more likely that the partners will be able to align their interests and behave cooperatively. Again, we believe that pharmacies have higher expectations of fiduciary obligations for primary wholesalers than for secondary wholesalers. This is supported by the significantly greater levels of trust and cooperation between pharmacies and primary wholesalers, shown in the t-tests.

Pharmacy Influence

Pharmacy influence showed a significant positive association with cooperation for both primary and secondary wholesal-

ers. Our hypotheses derived from an assumption that an ability to influence another contributes to a party's motivation to cooperate with that (influenced) party. It appears that pharmacies believe that they have sufficient influence on the both primary and secondary wholesalers to feel comfortable with cooperation.

For primary wholesalers, this is an area where interpersonal relations can be vital. In most pharmacy-primary wholesaler relations, the wholesaler's service representative and driver are in regular social contact with pharmacy personnel. The service representative makes regular calls on the pharmacy to monitor service levels and to promote wholesaler offerings. Often, these visits include some problem solving by the representative. When the representative accommodates the pharmacy manager, the manager will perceive that the pharmacy has some influence in the relations. Similarly, drivers can be asked to oblige the pharmacy staff with favors such as assistance with order problems or carrying merchandise to another pharmacy on the delivery route.

Pharmacy influence in relations with secondary wholesalers probably is affected by the low dependence on these wholesalers. Low dependence derives from the availability of alternatives (i.e. a primary wholesaler) and low level of benefits provided by the secondary wholesaler. Power has been portrayed as the inverse of dependence (36). Thus, low dependence means power for the pharmacy. Power in a relationship can be translated to influence and comfort in cooperation (37). Thus, because the pharmacy feels little risk and low dependence, it is willing to cooperate with the secondary wholesaler.

Customer Service Level

Customer service level was the only variable that showed a different association for primary wholesaler versus secondary wholesaler. Our logic here was that the services provided by a primary wholesaler would influence a pharmacy's cooperation, while the service levels of secondary wholesalers were too low to have an impact on cooperation. The value added by primary wholesaler services would help the pharmacy to achieve its goals, and align its activities with the wholesaler. However, secondary wholesalers have less overall effect on a pharmacy's achievement of goals. Thus, the customer service levels of secondary wholesalers are not associated with cooperation.

As drug wholesalers move toward greater integration with their pharmacy customers, the impact of service levels should be considered. New services, such as automatic inventory management and even disease management programs will require cooperation between pharmacies and wholesalers. Because new services often need some refining, drug wholesalers should closely monitor their own performance as the new programs are rolled out. Failure to maintain high service levels could result in limited cooperation and even severed pharmacy—wholesaler relations.

Wholesaler Influence

Wholesaler influence had no significant association with cooperation for either type of wholesaler. While we had predicted no association between wholesaler influence and cooperation for secondary wholesalers, we had hypothesized a positive association for primary wholesalers. Apparently the pharmacy respondents perceived no link between wholesaler influence and cooperation.

One explanation is that the pharmacy respondents were less concerned with wholesaler influence, than with their own influence in the relation. That is, wholesaler influence was not a concern as long as they were comfortable with the pharmacy influence in the relation. This suggests that influence is not a zero-sum construct across pharmacy-drug wholesaler relations. Future research is needed to better examine this issue.

Duration of Relations

The duration of relations also did not exhibit a significant association with cooperation for either type of wholesaler. We had hypothesized that duration of relations would have no effect on cooperation with secondary wholesalers, but a positive association for pharmacy-primary wholesaler relations. For primary wholesalers our argument was that the duration of relations would serve as a proxy for the stage of relationship development. That is, the longer firms had been trading with each other, the greater would be the level of cooperation between them (i.e. the relationship would have progressed to a more cooperative stage). Our findings suggest that the level of cooperation is not a linear function of time. It could be that environmental factors, such as the influence of managed care, have affected the development of cooperation between pharmacies and wholesalers. We are limited in further examination of duration of relations by cross-sectional data. Longitudinal study of pharmacy-wholesaler relations would allow better understanding of the role of duration of relations in cooperation between trading partners.

Limitations

There are several limitations to our study. First, we assessed pharmacy-drug wholesaler relations from the pharmacy perspective only. While this allowed us to test our hypotheses, it is likely that measurement from the drug wholesaler perspective would have improved our understanding of pharmacy-wholesaler relations. It is possible that discrepancies exist between a pharmacy's perception and a wholesaler's perception of some elements of their trade relations.

Another limitation is collinearity among the independent variables, as evidenced by the moderate correlations among some of them (e.g. trust and customer service level). Some correlation among these constructs was expected, since they are theoretically related. In a Monte Carlo study that examined the effect of collinearity, sample size, and overall model fit (i.e. R-square), Mason and Perreault (38) showed that the negative effects of collinearity could be overcome somewhat with power. According to their criteria, our study has moderate collinearity, large sample size, and moderate overall model fit. These conditions were associated with no problems in estimating the regression coefficients. Nonetheless, we recognize the limitation of our data, in this area.

In addition, the study was cross-sectional. We can improve our knowledge of ongoing interfirm relationship processes by increasing the number of longitudinal studies of interfirm relations. For example, a longitudinal study would allow the capture of temporal effects such as the growth of trust and cooperation or the refinement of effective influence strategies.

Implications for Future Research

Cooperative arrangements (e.g. partnerships, strategic alliances) between trading partners have received notable attention in the business literature (1–2,39–40). Some of the results from that literature have been replicated in the special case of pharmacy-drug wholesaler relations (i.e. a positive association between trust and cooperation). A trend in the business literature has been to try to explain cooperative arrangements, using a general structure and process model (24). A common approach has been to use variables from transaction cost economics (e.g. idiosyncratic investments, hostages) to represent structural characteristics. Similarly, relational exchange, as described by Macneil (41) and others (7), has been a key component of the process of interfirm relations (39). This approach might prove useful in expanding our understanding of dyadic relations within pharmaceutical marketing channels and should be explored.

We identified trust as a key factor in the development of cooperation in pharmacy relations with primary and secondary wholesalers. Research is needed on the development of trust within interfirm relations. Several literature areas could be used to address the formation of trust: social and political discussions of society (13,42), as well as interfirm and intrafirm studies (23,43). Consideration of findings from different research settings can assist researchers in developing a useful theory for trust within interfirm relations.

A third area for future research is to integrate affective components of interfirm relations with economic ones. A conceptual beginning was made when Stern and Reve (44) advanced a political economy framework to study marketing channels and exchange relationships. However, little work has been done in blending the polity and economy of interfirm relations. One recent study has addressed this issue by studying the associations among customer satisfaction, market share, and profitability (45). The authors demonstrated economic benefits of increasing customer satisfaction. Further work should consider economic gains from non-economic components such as cooperation or trust.

In conclusion, we identified trust and pharmacy influence as factors associated with cooperation between pharmacies and drug wholesalers. Additionally, customer service level was positively associated with cooperation for primary wholesalers only. Given potential changes in our health care system, such as disease management by pharmacists and efficient consumer response distribution of pharmaceuticals, it is likely that pharmacies and drug wholesalers could benefit from cooperative arrangements between each other. It is hoped that this study has contributed to our understanding of cooperation between pharmacies and drug wholesalers.

APPENDIX. ITEMS OF PURIFIED MEASURES

	Item/total correlation
Customer Service Level[a]	
Filling orders accurately.	.60
Delivering on time.	.59
Filling orders completely.	.61
Ease of ordering.	.50
Trust[b]	
This wholesaler really knows its business.	.71
The personnel of this wholesaler are knowledgeable.	.67
This wholesaler tells the truth when describing the benefits of its services.	.68
This wholesaler is very reliable.	.73
Cooperation[b]	
We both cooperate to solve disagreements.	.70
The activities between us and this wholesaler are well coordinated.	.69
Working with this wholesaler allows us to pursue our own goals.	.69
Disagreements with this wholesaler are solved by working together.	.65

[a] Scale: 1-Poor 2-Fair 3-Good 4-Very Good 5-Excellent.
[b] Scale: 1-Strongly Disagree 2-Disagree 3-Neither Agree nor Disagree 4-Agree 5-Strongly Agree.

ACKNOWLEDGMENTS

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