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ORIGINAL EMPIRICAL RESEARCH

Dependence and interdependence in marketing relationships: meta-analytic insights

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Abstract The authors conduct a meta-analysis to examine dependence and interdependence in marketing relationships. Analyses reveal that dependence affects performance primarily through relationship quality and cooperation, while interdependence has substantial direct effects as well as effects mediated through relationship-specific investments and cooperation. Regarding relationship context, effects of dependence are stronger in channel relationships than end-user relationships and for services than goods; interdependence does not display the same pattern. Regarding methodological context, dependence measures that emphasize relationship value versus switching costs have different moderating effects; greater general dependence content is associated with weaker effect sizes for dependence but conversely greater effect sizes for interdependence. These results suggest that new insights can be gained by distinguishing relationship value and switching cost components of dependence and by investigating the possibility that the conceptual domain of interdependence differs from that of dependence. Future research that strives for greater precision in the measurement of dependence and interdependence constructs and that simultaneously examines dependence and interdependence is recommended.

Keywords Dependence · Interdependence · Relationship value dependence · Switching cost dependence · Relationships · Channels · Meta-analysis · Measurement

Dependence plays a critical role in marketing relationships, affecting strategy, behavior, and economic outcomes (e.g., Frazier 1983; Frazier et al. 1989; Frazier and Rody 1991; Heide and John 1988; Hibbard et al. 2001; Kumar et al. 1995a; Lusch and Brown 1996). Dependence has been investigated in a vast number of marketing research studies as a focal construct, a context factor, or a control variable, but widely divergent—sometimes opposite-signed—findings inhibit definitive conclusions about the relationships between dependence and oft-studied constructs such as performance, cooperation, and relationship quality. Identification of factors that may reconcile seemingly inconsistent findings in dependence research would provide a roadmap for future investigations and benefit business practice.

In our effort to do so, we use the term "dependence" in reference to the unilateral dependence of each relationship party on its counterpart and "interdependence" to encompass both interdependence magnitude and interdependence asymmetry between those parties. We hypothesize that three primary factors contribute to inconsistent findings in dependence/interdependence research—the selection of constructs studied, the implicit relationship context, and unintentional measurement variation. First, we posit that contradictory findings arise because studies do not capture fully the interdependence structure within the relationship (Kumar et al. 1995a).[1] As nearly all prior studies examine *either* dependence or interdependence, this meta-analysis offers a unique opportunity to examine both *simultaneously* by

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[1] Following Kumar et al. (1995a), we use the term "interdependence structure" to refer collectively to interdependence magnitude, interdependence asymmetry, own dependence, and partner dependence.

integrating the accumulated body of research. A more comprehensive consideration of dependence and interdependence variables may disentangle their effects. Second, relationship context can contribute to disparate findings. We examine two aspects that we theorize interact significantly with dependence—relationship type and product type. Specifically, we anticipate that suppliers' channel relationships with resellers differ from suppliers' relationships with end-user customers and that service-based relationships differ from goods-based exchange. Third, divergent findings can result from unintentional but important differences in the measurement of dependence, subtle characteristics in the content of the measures that implicitly alter their relative focus on different aspects of dependence. Developing greater conceptual clarity about the nature of dependence, identifying the desired focal dependence constructs, and then using scales that more precisely measure those desired constructs promises to advance theory and reduce idiosyncratic results.

To synthesize insights from previous research and test our hypotheses, we conduct a meta-analysis of the dependence/interdependence research literature. We examine an interdependence structure resource-based view framework (IS-RBV) that builds on the Palmatier et al. (2007a) model of interorganizational relationship performance by including own dependence, partner dependence, interdependence magnitude, and interdependence asymmetry favoring the partner. This more comprehensive approach allows us to determine if dependence adds explanatory power beyond that provided by interdependence and, concurrently, if dependence is redundant after accounting for the effects of interdependence.

After establishing the main effects of dependence and interdependence using a structural equation model, we examine the moderating effects of two context variables—relationship type and product type. Finally, we examine a methodological moderator, specifically, the nature of dependence measurement and its implicit focus on overall dependence and two theoretically specified components—relationship value dependence (RV Dep), rooted in the unique irreplaceable value received from the current relationship, and switching cost dependence (SC Dep), arising from the anticipated latent costs that would be realized if the relationship ended.

This study offers several contributions. We demonstrate that dependence and interdependence are not redundant; focusing on only one aspect tells just part of the story. Researchers who choose to examine only dependence or only interdependence should be cognizant of the loss of comprehensiveness and explanatory power, as well as the potential misleading conclusions due to the neglected dependence or interdependence variables.

We also reinforce the importance of accounting for relationship context when conducting research on dependence. Evidence indicates that the effects of dependence on performance are stronger (more positive) and that the effects of interdependence on dyadic cooperation are weaker (less positive) in supplier–reseller relationships than in relationships between suppliers and end-user customers. In addition, dependence has stronger (more positive) effects in service relationships than in goods-based relationships.

Finally, we uncover compelling evidence that unintentional, seemingly minor variations in the content of measurement scales lead to systematically different patterns in the observed effects of dependence and interdependence. Effects differ systematically based on the relationship value dependence content, the switching cost dependence content, and the general unspecified dependence content of the measures used. Such differences in the composition of measurement can explain much inconsistency in results across prior studies. We highlight the importance of clearly specifying the dependence or interdependence construct studied and then devising measures that more precisely tap that, and only that, construct's conceptual domain. Our research suggests that comprehensive examination of both relationship value dependence and switching cost dependence as distinct components of overall dependence is advisable.

Theoretical foundation

Dependence and interdependence

We posit that many inconsistent findings in dependence/interdependence research arise from the failure to fully specify the interdependence structure of the relationship, including "each firm's dependence, the magnitude of the firms' total interdependence, and the degree of interdependence asymmetry between the firms" (Kumar et al. 1995a, p. 349). Building on Emerson's (1962) seminal work, researchers initially focused on one focal party's dependence (e.g., Frazier et al. 1989; Frazier and Rody 1991; Rinehart and Page 1992). *Dependence*, the need to maintain a relationship with another party in order to achieve one's goals (Beier and Stern 1969), has been studied at various levels of analysis and with diverse focal referents within interorganizational (e.g., selling firm ↔ buying firm), interpersonal (e.g., salesperson ↔ buyer), and person–firm (e.g., consumer ↔ retailer) relationships. For simplicity, we use the terms "focal party" and "partner" to refer to the relationship participants, whether they are organizations, organization representatives, or consumers. We examine the focal party's *own dependence* and *partner dependence*.

Later researchers theoretically explicated and examined interdependence, including both *interdependence magnitude* and *interdependence asymmetry* (Kumar et al. 1995a; Gundlach and Cadotte 1994). Subsequently, a stream of interdependence research has developed separately from, and seldom intersected with, the ongoing stream of dependence

research. Researchers typically investigate either dependence or interdependence and rarely discuss why one is more theoretically relevant than the other, if the alternative was considered, or if precedent was simply followed.[2] Regardless of which dependence or interdependence constructs a researcher specifically investigates, all other unexamined, omitted aspects of the interdependence structure nevertheless exist. Unmeasured own dependence, partner dependence, interdependence magnitude, or interdependence asymmetry can impact the variables of interest that are studied, resulting in misspecified models and misleading results.

We hypothesize that dependence and interdependence have non-redundant effects because of their conceptual distinctiveness, with inherently different conceptual domains and focal referents. Dependence is a property of the focal party and its unique position, requiring consideration of both its current relationship and its alternatives. Interdependence is a property of the collective relationship and thus inherently operates at a different level of analysis. Dependence focuses on the party's need to maintain its present relationship with the partner, considering factors both internal to and external to the current relationship, such as the availability of viable alternative partners. Interdependence, in contrast, primarily has an intra-relationship focus, emphasizing the extent to which focal party and partner are enmeshed in their present relationship with each other. Therefore, we anticipate that dependence variables provide explanatory power beyond that provided by interdependence variables alone and that interdependence provides unique information beyond that offered by the parties' unilateral dependence on each other. We hypothesize:

H1: In marketing relationships, interdependence (interdependence magnitude and asymmetry favoring the partner) has a different pattern of effects than dependence (own dependence and partner dependence).

Relationship context

We posit that systematic differences in the nature of marketing relationships account for a significant portion of inconsistent results in dependence/interdependence research. We consider two aspects of relationship context that are particularly likely to modify the impact of dependence and interdependence—relationship type and product type.

Relationship type One important way vertical marketing relationships differ is in the nature of the downstream party, which is particularly relevant for dependence/interdependence research. Marketing scholars' investigations of dependence originated in channels research (e.g., Anderson and Narus 1984; Frazier 1983), suggesting that concerns about dependence were particularly salient in supplier–reseller *channel relationships* such as those between manufacturers and their dealers. Later, researchers investigated *customer relationships* in which the downstream partner is an end-user, rather than a reseller, of the product offered by the supplier (e.g., Rinehart and Page 1992; Scheer et al. 2010). End-user customers include, for example, consumers of services or manufacturers who acquire from OEM suppliers goods that the manufacturers use to produce their own products for their own customers.

Channel relationships between a supplier and a reseller are qualitatively different from customer relationships. In channel relationships, suppliers and their resellers handle the same products, serve the same downstream customers, and face similar environmental uncertainties, threats, and opportunities. Suppliers seek channel partners that help serve their mutual end-users' needs effectively, thereby expanding the total channel revenue pie to be shared by supplier and reseller (Jap and Ganesan 2000). In contrast, non-reseller business customers sell different products, serve different markets, and operate in different environments than their suppliers; flexibility and maintaining alternatives are often highly prized by both buyer and seller. We anticipate that deeper dependence and interdependence offer greater relational dividends in channel relationships than in customer relationships, as supplier and reseller often need to integrate more closely in pursuit of their inherent superordinate goal (Reve and Stern 1979) of better serving their shared downstream customers. We hypothesize:

H2: Dependence and interdependence have stronger effects in channel (supplier–reseller) relationships than in customer (supplier–end-user) relationships.

Product type Marketing relationships involving goods versus services differ in ways that can alter the effects of dependence and interdependence. Inherent qualities of services suggest that greater value can be obtained from more enmeshed relational exchange. As services are high in experience and credence qualities, buyers often have difficulty assessing potential alternative providers' ability, offerings, and service quality; buyers therefore have strong motivation to maintain successful and satisfying service relationships to minimize transaction costs. For many types of personalized or customized services, buyers must share their desires freely and offer feedback during service creation to receive services that meet their specific needs. Sellers of such services are highly

[2] Only a handful of studies include both dependence and interdependence (e.g., Kim 2002; Van Bruggen et al. 2005) but they do not examine both simultaneously in a causal model.

motivated to interact with the buyer as well, for services that do not satisfy the intended buyer cannot be inventoried or readily diverted to another buyer (Zeithaml et al. 1985). To avoid mis-designed services, the seller solicits information from the buyer, is responsive to the buyer's needs, and alters course as feedback is obtained during the service creation process. Thus, all else being equal, in comparison to goods-based exchanges, service-based relationships involve a comparatively higher degree of ongoing interaction between seller and buyer. We hypothesize:

H3: Dependence and interdependence have stronger effects in service relationships than in relationships that focus on the provision of goods.

Dependence type: overall dependence and its components

Although there is consensus in the marketing literature that dependence is the need to maintain a relationship with a partner, this definitional consistency is not accompanied by operational coherence. As Heide and John observed in 1988: "it is striking to note the various empirical indicators that have been used more or less interchangeably as measures of dependence" (p. 34). This continues to the present day. Our extensive review of the dependence literature uncovered a wide variety of operationalizations. Although these diverse measures all fall within the broad conceptual domain of dependence, many measures have little in common with each other. No dominant approach emerges.

In an attempt to bring some order to the chaos, we draw inspiration from Emerson's (1962) classic conceptualization of dependence and the Scheer et al. (2010) bi-dimensional dependence model. Many researchers have built on Emerson's insights, operationalizing dependence by focusing on factors associated with *motivational investment* in the current relationship and lower *availability of alternatives* to that relationship (1962, p. 32). Frazier summarized over 30 years ago (1983, p. 71):

> The higher the level of valued rewards . . . relative to those available in alternative relationships, the higher a firm's dependence . . . Furthermore, the investment . . . in terms of time, effort, and money as well as the perceived costs of switching to and starting another exchange relationship can also contribute to its dependence.

Extending Frazier's observations, Scheer et al. (2010) identify two distinct components of dependence which constitute different reasons a party may need to maintain its relationship with a current partner.[3] *Relationship value dependence* (RV Dep) is a party's need to maintain its relationship with an exchange partner because of the irreplaceable, unique value that would be forfeited if that relationship ended. *Switching cost dependence* (SC Dep) is the need to maintain the relationship with a specific partner because of the unrealized costs that would be incurred if that relationship ended.

These two dependence components are consistent with the Emersonian view of dependence. Each component captures distinct aspects of the party's motivational investment in the current relationship and its availability of alternatives. RV Dep is based in net value received from the current relationship and the extent to which that value cannot be replicated through the next best alternative. SC Dep is based in anticipated costs of ending and disengaging from the current relationship plus the projected costs to search, screen, evaluate, select, solicit, initiate, and transition to the next best alternative. Sources of RV Dep include, for example, unique patented products, highly customized services, and the present value of irreplaceable future net revenues; these differ greatly from contractually-mandated termination fees, expected post-termination litigation costs, anticipated costs of qualifying new candidates, investments to establish the replacement relationship, and similar sources of SC Dep. These dependence components differ in content, temporal orientation, and valence. RV Dep is rooted in the ongoing relationship, while SC Dep is based in a projected state. RV Dep focuses on the present, but SC Dep focuses on the potential future that becomes manifest only when the relationship ends. RV Dep represents a positive motivation for continuing the relationship; SC Dep encompasses barriers to exiting the relationship, a negative motivation for continuation.

Consistent with the theoretical and empirical evidence offered by Scheer et al. (2010), we anticipate that the two dependence components have differential effects. Our review of the literature reveals that some measures focus specifically on RV Dep or SC Dep, while others assess general, unspecified dependence not directly associated with either component. We hypothesize that the dependence content of measurement scales moderates the effects of dependence and interdependence.

H4: The effects of dependence and interdependence are moderated by the dependence content (relationship value dependence, switching cost dependence or general dependence) implicitly examined.

[3] We revise the Scheer et al. (2010) terminology to emphasize the temporal and conceptual differences between the dependence components. Relationship value dependence (benefit-based dependence) is based in the *value received from the current relationship* that cannot be replaced via available alternatives. Switching cost dependence (cost-based dependence) is rooted in *latent costs that are anticipated to be realized when the relation ends* and the firm must transition to its next best alternative.

Researchers use general dependence measures in an effort to capture overall dependence. General dependence measures can potentially capture overall dependence, *if* the informant takes a comprehensive approach and carefully considers all aspects and sources of dependence when responding. However, general dependence measures seldom explicitly focus informant attention sufficiently on both RV Dep and SC Dep, instead asking in a general manner about undefined dependence. Although some informants may instinctively engage in a comprehensive assessment when faced with ambiguous, non-specific general dependence measures, we anticipate that informants often will interpret those measures idiosyncratically through the lens of whatever is most salient at that time. Interpretation of general dependence items could vary based on recent developments in the focal party-partner relationship or could be systematically altered by factors in the research method—the preface preceding the Gen Dep items, whether previous questions focused on "dark side" variables or positive relationship aspects, and many other factors that generate idiosyncratic responses. We theorize that items which focus on general dependence will be interpreted idiosyncratically and thus have greater error variance and, therefore, that measures with greater Gen Dep content will, on average, have weaker correlations with the mediating and outcome variables studied.

H5: The effects of dependence and interdependence will, on average, be weaker for measures that have greater general dependence content.

Method

Meta-analytic framework

We examine an interdependence structure resource-based view framework (IS-RBV) that builds on the Palmatier et al. (2007a) model of interorganizational relationship performance. The RBV model, which out-performed alternative models in the Palmatier et al. (2007a) longitudinal study, includes variables that have been frequently studied with interdependence and provides rationale for the causal ordering of those variables. Our IS-RBV framework extends Palmatier et al. (2007a) by incorporating own and partner dependence as well as interdependence variables and by examining the framework using meta-analysis. Our research also goes well beyond the Palmatier et al. (2006) meta-analysis, which includes only buyer-side dependence; that study also co-mingles unilateral dependence and relative dependence, constructs that we disentangle by examining both own dependence and interdependence asymmetry favoring the partner.

The IS-RBV framework is illustrated in Fig. 1. As a primary purpose of our meta-analysis is to simultaneously examine effects of both dependence and interdependence, we limit our focus to variables that have been sufficiently studied with all four of those variables; sales growth and conflict from Palmatier et al. (2007a) did not meet this criterion. The four dependence and interdependence variables are modeled as exogenous elements of the interdependence structure, each of which can potentially have a unique pattern of effects on the mediator and outcome variables. Following Palmatier et al. (2007a), we model relationship quality and relationship-specific investments as mediators of effects on relationship outcomes, specifically, dyadic cooperation and performance.

Compilation of studies for meta-analysis

We reviewed empirical articles published in marketing and management journals from 1970 through August 2014, collecting those that examine dependence or interdependence in business relationships. We engaged in a keyword search of electronic databases (ABI Inform, Business Source Premier, and ScienceDirect), conducted a manual search of titles and abstracts of articles, and consulted the Social Sciences Citation Index and Google Scholar to identify studies referencing seminal articles (e.g., Anderson and Narus 1990; Frazier 1983; Kumar et al. 1995a). In addition, we sought unpublished or forthcoming studies by posting a request on ELMAR and via personal e-mails to researchers who have published studies examining dependence or interdependence.

As we accumulated studies and measures of dependence, we found very similar scales appearing with different labels (e.g., power, concentration of sales, availability of alternatives, switching costs, importance). Given our motivation to reconcile seemingly inconsistent effects, we included all studies that examined dependence, analogs of dependence, its components, or interdependence, regardless of the label used in the original study. Ultimately, we narrowed our focus to studies that include dyadic cooperation, performance, relationship quality, or relationship-specific investments (RSIs), as a sufficient body of work exists to permit causal model analysis with these constructs.

This multi-stage effort generated a final meta-analysis sample of 211 empirical studies, in which a total of 976 correlations from 218 independent samples were obtained with a total aggregate N of 81,711. Sample statistics are provided in Appendix A. Our sample includes 167 articles in marketing and related journals (e.g., retailing, services, logistics, sales), 42 articles in management journals, one unpublished study, and additional data from one study published in a marketing journal. A list of these articles is available from the authors.

Orientation of dependence in source studies

When gathering data, we focused on the conceptual domain of the construct measured, classifying variables from source

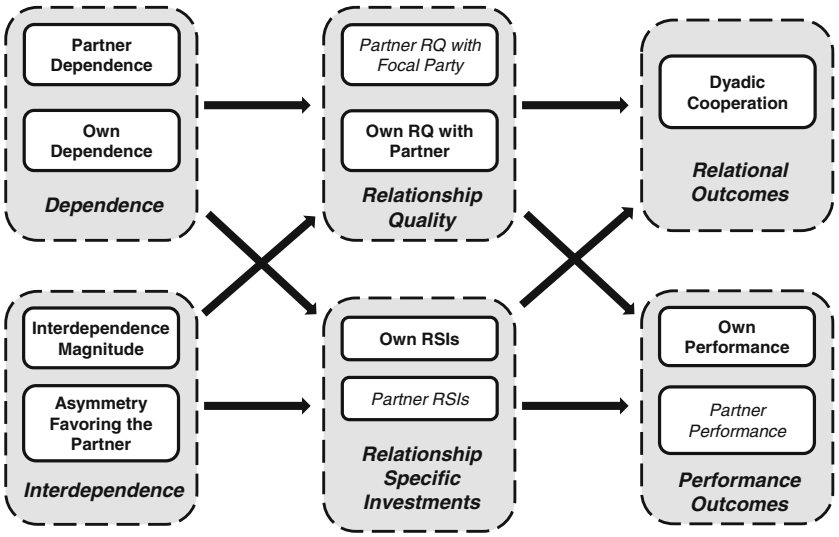

Fig. 1 Meta-analysis framework: interdependence structure resource-based view model

Note: Variables in boldface were examined in the structural equation model. Italicized variables were examined only in pairwise analyses due to insufficient number of primary studies examining those variables and other variables in the framework.

studies according to the construct definitions summarized in Table 1. When an informant reports his/her organization's dependence or an organizational buyer or consumer reports his/her dependence, we classify this as *own dependence*. When an informant reports the relational counterpart's dependence, we classify this as *partner dependence*. Terms "own" and "partner" were used to categorize all other non-dyadic constructs. When the informant reports about his/her organization, the constructs are labelled own performance, own relationship quality, and own RSIs; reports about the counterpart's status are labelled partner performance, partner relationship quality, and partner RSIs.

In this meta-analysis, we examine both *interdependence magnitude*, the relationship participants' mutual need for and reliance on each other, and *asymmetry favoring the partner*, the extent to which imbalance between the focal party's own dependence and the partner's dependence places the focal party at a disadvantage. Asymmetry favoring the partner encompasses the two primary operationalizations of asymmetry in the marketing literature—simple relative dependence, own dependence on a partner minus the partner's dependence (e.g., Anderson and Narus 1990), and partner's dependence advantage derived using spline variables (e.g., Kumar et al. 1998).

Pairwise analyses

Prior to testing our hypotheses, we first report pairwise analyses of dependence and interdependence with all mediating and outcome variables depicted in Fig. 1. We present our pairwise analyses in Table 2. With one exception, all pairwise correlation coefficients are significant at $p<.01$. Construct pairs were analyzed only when our sample included at least three raw effects for that pair. We corrected raw effects for measurement error by dividing the correlation coefficient by the product of the square root of the reliabilities of the two constructs (Hunter and Schmidt 1990). When a study did not report reliability or used a single item, we used the mean reliability for that construct across all other studies (Geyskens et al. 1998). We transformed the reliability-corrected correlations into Fisher's z scores, weighting them by an estimate of the inverse of their variances (N-3) to assign greater weight to larger sample sizes. These were then converted back to correlation coefficients and 95% confidence intervals were calculated (Hedges and Olkin 1985). To evaluate potential publication bias, we estimated File Drawer N, the number of missing studies reporting null results that would bring the effect to non-significance (Rosenthal 1979). In addition, the Q-statistic of homogeneity is significant for each pairwise relationship, indicating substantial variation in effects across studies, which may be explained by moderators.

Own dependence, partner dependence, interdependence magnitude, and asymmetry favoring the partner are all positively correlated with own relationship quality (r=.42, .22, .27, .08) and own RSIs (r=.36, .25, .32, .17). Similarly, partner dependence and own dependence are positively correlated with partner relationship quality (r=.35, .27) and partner RSIs (r=.46, .23); interdependence magnitude is positively associated with partner relationship quality (r=.25), but not with partner RSIs (r=−.03, ns). Own dependence, partner dependence, and interdependence magnitude are all positively related to dyadic cooperation (r=.29, .34, .38) and own performance (r=.23, .13, .20). Asymmetry favoring the partner is negatively correlated with cooperation (r=−.09). Surprisingly,

Table 1 Constructs examined: definitions, common labels, and representative papers

Constructs	Definitions	Common labels	Representative papers
Dependence			
Own dependence	Focal party's need to maintain its relationship with an exchange partner in order to achieve desired goals	Outcomes given alternatives, partner's role performance, replaceability of partner[a]	Anderson and Narus 1984; Frazier 1983; Heide and John 1988
Partner dependence	Partner's need to maintain its relationship with the focal party in order to achieve desired goals	Partner's alternatives to firm[a], power over the partner, partner's switching cost	Ferguson et al. 2005; Ghosh et al. 2006; Ryu et al. 2008
Interdependence magnitude	The extent to which the focal party and partner mutually need to maintain their relationship with each other	Mutual dependence, total dependence, bilateral interdependence	Ganesan and Hess 1997; Hibbard et al. 2001; Kim 2002
Asymmetry favoring the partner	The extent to which imbalance between the focal party's and partner's dependence benefits the partner and places the focal party at a disadvantage	Relative dependence, partner's dependence advantage	Anderson and Narus 1990; Gulati and Sytch 2007; Jarratt and Morrison 2003; Kumar et al. 1998
Mediators and outcomes			
Relationship quality	Conscious assessment of the overall worth, value, and strength of the focal party's relationship with the partner	Trust, relationship satisfaction, commitment, loyalty	Anderson and Weitz 1989; Frazier 1983; Ganesan and Hess 1997; Scheer et al. 2010
Relationship-specific investments	Non-redeployable investments made by the focal party that are specialized and dedicated to support the relationship with the partner	Transaction-specific investments, idiosyncratic investments	Anderson and Weitz 1992; Ganesan 1994; Heide and John 1988
Dyadic cooperation	Bilateral collaboration, coordination or cooperative behaviors between the focal party and its partner	Coordination efforts, mutual cooperation	Anderson and Narus 1984; Celly and Frazier 1996
Performance	Tangible and intangible outcomes the focal party receives from its relationship with a partner	Sales, share of wallet, sales effectiveness, profit, subjective performance outcomes	Birkinshaw et al. 2001; Frazier and Lassar 1996; Hibbard et al. 2001

[a] Reverse coded

asymmetry favoring the partner is positively correlated with own performance (r=.38), although this is based on only four raw effects. Finally, interdependence magnitude is positively correlated with partner performance (r=.53).

Causal model analysis

Method We examined our IS-RBV framework using a structural equation model to test Hypothesis 1. We intended to examine relationship quality, RSIs, and performance for both the focal party and its partner, as was done in the pairwise analyses. However, as variables were included in the causal analysis only when we uncovered at least three raw effects between that variable and all other variables in the causal model, we were unable to examine partner relationship quality, partner RSIs, or partner performance.

Our causal model examines dependence and interdependence effects on own relationship quality, own RSIs, dyadic cooperation, and own performance. The meta-analytic correlation matrix used for model estimation is provided in Table 3. The harmonic mean sample size (N=2336) was used in the causal model estimation, which provides a sensitive test of goodness of fit and significance (Brown and Peterson 1993).

The fully mediated IS-RBV model did not fit the data well: $\chi^2_{(10)}$ =554.166, p<.01, CFI=.899, NFI=.898, GFI=.944, RMSEA=.153. Modification indices suggested the addition of paths from own relationship quality to own RSIs and from cooperation to own performance. Also, RSIs had no direct effect on performance and additional non-mediated effects of dependence and interdependence were required. The revised model reported in Table 4 exhibits good fit: $\chi^2_{(6)}$ =7.622, p>.25, CFI =1.000, NFI=.999, GFI=.999, RMSEA=.011. Figure 2 depicts this partial mediation IS-RBV model, with additional paths indicated via dashed lines. All reported paths are significant at p<.01 (two-tailed).

Table 2 Results of pairwise analyses

Dependence construct	Mediating & outcome constructs	Simple average *r*	Average *r* adjusted for reliability	Sample weighted reliability- adjusted average *r*	95% Confidence interval		Total number of raw effects	Total N	File drawer N (two- tailed test)	Q-statistic of homogeneity (df)
					Lower bound	Upper bound				
Own dependence	Own relationship quality	.30	.36	.42**	.41	.43	494	67,946	4,864,163	37618.349 (493)**
Partner dependence		.17	.21	.22**	.20	.24	49	7706	6318	525.219 (48)**
Interdependence magnitude		.25	.31	.27**	.25	.29	35	5559	5746	634.169 (34)**
Asymmetry favoring partner		.04	.05	.08**	.04	.12	14	2568	58	181.246 (13)**
Own dependence	Partner relationship quality	.16	.22	.27**	.22	.31	7	970	141	50.358 (6)**
Partner dependence		.27	.33	.35**	.31	.38	10	1797	851	95.351 (9)**
Interdependence magnitude		.25	.31	.25**	.16	.34	3	447	25	12.343 (2)**
Own dependence	Own relationship-specific investments	.26	.32	.36**	.35	.37	68	11,226	48,275	1990.640 (67)**
Partner dependence		.18	.24	.25**	.22	.27	19	3056	1192	178.813 (18)**
Interdependence magnitude		.29	.35	.32**	.29	.36	5	2236	364	56.230 (4)**
Asymmetry favoring partner		.18	.22	.17**	.10	.24	3	481	24	58.627 (2)**
Own dependence	Partner relationship-specific investments	.19	.24	.23**	.21	.25	31	6553	3946	571.388 (30)**
Partner dependence		.36	.48	.46**	.43	.49	14	1930	3038	171.106 (13)**
Interdependence magnitude		.06	.07	−.03	−.07	.01	4	2060	n/a	64.290 (3)**
Own dependence	Dyadic cooperation	.18	.26	.29**	.28	.31	67	12,571	23,138	2143.661 (66)**
Partner dependence		.26	.31	.34**	.32	.36	21	3868	3513	259.873 (20)**
Interdependence magnitude		.30	.38	.38**	.36	.40	20	4048	4174	535.862 (19)**
Asymmetry favoring partner		−.06	−.08	−.09**	−.13	−.05	14	1598	46	114.317 (13)**
Own dependence	Own performance	.17	.19	.23**	.21	.24	58	8883	692	1973.875 (57)**
Partner dependence		.09	.11	.13**	.10	.15	21	3673	342	230.767 (20)**
Interdependence magnitude		.17	.19	.20**	.16	.24	9	1741	207	70.397 (8)**
Asymmetry favoring partner		.18	.22	.38**	.34	.43	4	1509	134	82.757 (3)**
Interdependence magnitude	Partner performance	.35	.45	.53**	.49	.56	6	698	640	135.116 (5)**

** $p < .01$. Analysis was restricted to construct pairs for which source studies in our meta-analysis reported at least 3 raw effects

Table 3 Meta-analytic correlation matrix

	OWNDEP	PTRDEP	INTERDEP	ASYM	OWNRQ	OWNRSIs	DYADCOOP	OWNPERF
Own dependence (OWNDEP)	1.00	62 (9118)	9 (2421)	9 (2028)	494 (67,946)	68 (11,226)	67 (12,571)	58 (8883)
Partner dependence (PTRDEP)	.22	1.00	6 (820)	5 (658)	49 (7706)	19 (3056)	21 (3868)	21 (3673)
Interdependence magnitude (INTERDEP)	.49	.79	1.00	10 (1613)	35 (5559)	5 (2236)	20 (4048)	9 (1741)
Asymmetry favoring the partner (ASYM)	.25	−.27	−.12	1.00	14 (2568)	3 (481)	14 (1598)	4 (1509)
Own relationship quality (OWNRQ)	.30	.17	.21	.06	1.00	47 (11,056)	80 (11,498)	40 (7145)
Own relationship-specific investments (OWNRSIs)	.28	.18	.26	.12	.27	1.00	20 (5484)	14 (1560)
Dyadic Cooperation (DYADCOOP)	.23	.27	.28	−.07	.45	.23	1.00	21 (4871)
Own performance (OWNPERF)	.18	.10	.16	.30	.29	.17	.31	1.00

Average sample-size-weighted correlation coefficients (r) are presented below the diagonal. Total number of effects and sample sizes for each construct pair (N) are presented above the diagonal. The harmonic mean sample size of 2336 was used to estimate the causal model

Results Consistent with H1, we find that own and partner dependence enhance relationship quality (β=.28, .11), but only a party's own dependence has a direct impact on its RSIs (β=.11). In contrast, interdependence magnitude and asymmetry favoring the partner both promote own RSIs (β=.18, .11), but neither affects own relationship quality. In turn, own relationship quality positively affects both dyadic cooperation and own performance (β=.38, .15). RSIs also increase cooperation (β=.09) but do not directly affect performance. Furthermore, we find that a party's relationship quality has a positive effect on its own RSIs (β=.20) and that cooperation enhances performance (β=.25).

Not all effects of dependence and interdependence are fully mediated. Own dependence and partner dependence have direct positive effects (β=.07, .15), and asymmetry favoring the partner has a negative direct effect (β=−.09) on cooperation. A party's own dependence has a negative direct effect (β=−.07) and interdependence magnitude and asymmetry favoring the partner both have direct positive effects (β=.13, .34) on own performance.

Discussion of findings and implications Our findings are consistent with the logic and causal ordering of the Palmatier et al. (2007a) RBV model, but with interesting differences revealed by our inclusion of the full interdependence structure (Kumar et al. 1995a). Dependence and interdependence impact performance through different mediating mechanisms. Effects of dependence on performance flow primarily through

Table 4 Causal model results

Antecedents → mediators	β	t-value	Mediators → outcomes	β	t-value
Full-mediation paths:					
Partner dependence → Own relationship quality	.11	5.64**	Own relationship quality → Dyadic cooperation	.38	19.94**
Own dependence → Own relationship quality	.28	13.74**	Own relationship quality → Own performance	.15	7.18**
Own dependence → Own RSIs	.11	4.47**	Own RSIs → Dyadic cooperation	.09	4.85**
Interdependence magnitude → Own RSIs	.18	7.70**			
Asymmetry favoring partner → Own RSIs	.11	5.15**			
Additional direct effect paths:					
Partner dependence → Dyadic cooperation	.15	7.59**	Own relationship quality → Own RSIs	.20	9.69**
Own dependence → Dyadic cooperation	.07	3.60**	Dyadic cooperation → Own performance	.25	12.03**
Own dependence → Own performance	−.07	−3.27**			
Interdependence magnitude → Own performance	.13	5.99**			
Asymmetry favoring partner → Dyadic cooperation	−.09	−4.35**			
Asymmetry favoring partner → Own performance	.34	17.43**			

** p<.01 (two-tailed). Model fit: $\chi^2_{(6)}$ =7.622, p>.25, CFI =1.000, NFI=.999, GFI=.999, RMSEA=.011

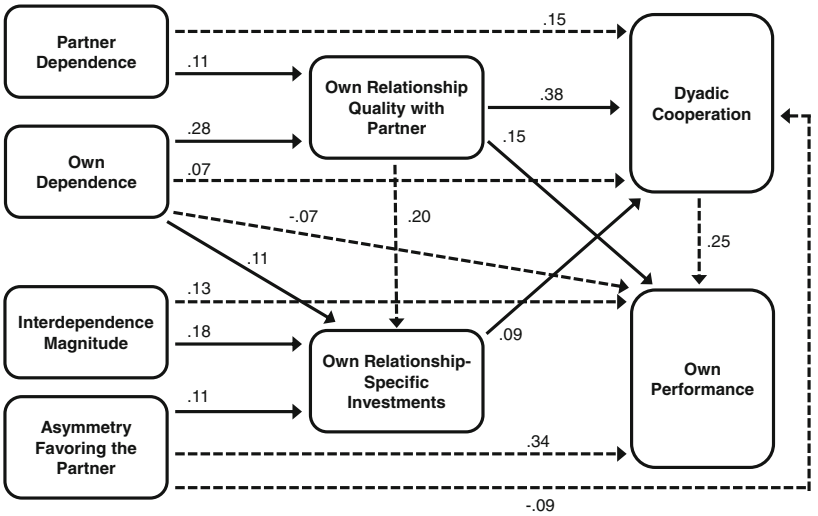

Fig. 2 Interdependence structure partially-mediated causal model

Note: Coefficients significant at $p < .01$ (two-tailed). Dashed lines are paths added to fully-mediated model; non-significant paths omitted. Model fit: $\chi^2_{(6)} = 7.622$, $p > .25$, CFI = 1.000, NFI = .999, GFI = .999, RMSEA = .011.

relationship quality and cooperation; own dependence has a negative direct effect on own performance, although this is of comparatively small magnitude. In contrast, interdependence magnitude and asymmetry favoring the partner have no direct or indirect effects on own relationship quality, but they do have substantial direct positive effects on own performance. Thus, H1 is supported, as dependence adds unique explanatory power not offered by interdependence and vice versa. Focusing only on dependence or only on interdependence captures a portion of the true, underlying impact of the interdependence structure. The positive effects of own and partner dependence on cooperation are both direct and mediated by own relationship quality and, subsequently, via relationship quality's impact on own RSIs. One's dependence provides motivation to engage in activities that enhance one's relationship quality with the partner and establish relational governance, thereby reducing the potential for exploitation of that dependence.

Consistent with our expectation, interdependence magnitude promotes investment in RSIs and performance. The more both parties have motivation to maintain the relationship and are enmeshed with each other, the lower the risk of relationship dissolution and the more willing they are to invest in that relationship—particularly when those investments are non-recoverable. Effects of interdependence on performance are only partially mediated through own RSIs. However, as we were unable to examine potential mediating effects through partner RSIs, it is possible that inclusion of both parties' RSIs would more fully mediate effects on performance.

Our finding that greater asymmetry favoring the partner undermines cooperation is consistent with previous studies that have found asymmetry, regardless of its direction, undermines trust and increases conflict (e.g., Anderson and Weitz 1989; Kumar et al. 1995a). As a party becomes more asymmetrically dependent on the partner, cooperation lessens, both because that party's willingness to cooperate is undermined and because the partner finds cooperation less essential.

Our other findings regarding asymmetry are more unexpected and intriguing. We might assume that if one is already relatively dependent on its partner, one would be reluctant to invest more in RSIs and thereby be tied even more closely to that relationship. Our data indicate, however, that asymmetry favoring the partner is *positively* related to own RSIs. Strategic investment in carefully selected RSIs can increase one's value to the relationship partner (Ghosh and John 1999). Relative dependence can give the party greater motivation to choose RSIs that make the party a better, more valued supplier, channel member, or customer for the partner and thereby, over time, reduce its own vulnerability.

Similarly, our finding that own performance is positively impacted by asymmetry favoring the partner is very intriguing. Although being on the disadvantaged side of asymmetry can result in lower performance if the less dependent partner extracts a disproportionate share of the distributable outcomes from the relationship, that partner can alternatively use power in ways that serve the interests of both parties, rather than in a self-serving fashion (Kumar et al. 1995b). Another possibility is that asymmetry's impact is mediated or moderated by constructs not captured in our model such as partner's market status. For example, many resellers have much higher asymmetric dependence on a market-leading supplier than on a smaller niche supplier—and will often make much more profit from the market leader's products.

Some of the most intriguing insights arise from juxtaposing our findings regarding interdependence magnitude and

dependence. Our results suggest that, when considering ways to enhance relationship quality, contemplation of own and partner dependence is sufficient; information gleaned from additional assessments required to contemplate interdependence may not be necessary. But when deciding whether to make relationship-specific investments, considering only unilateral dependence is not sufficient; the intricacies and implicit linkages revealed by interdependence are critical. This points to the need for theoretical development elaborating how interdependence differs from dependence.

We posit that interdependence is more inward-looking, focusing on the embeddedness and interplay of focal party and partner, while dependence inherently includes contemplation of elements both internal and external to their relationship. It is likely that some aspects relevant to interdependence are not captured by current definitions and measurement approaches. The empirical literature provides no guidance, for in nearly all studies, interdependence variables are constructed from scales measuring own dependence and partner dependence. Further, in the vast majority of primary studies, both own and partner dependence are reported by the same informant. Because interdependence has typically been measured in this manner, the deck was stacked against finding the differences hypothesized in H1, making the differential effects of dependence and interdependence that are found particularly compelling.

In summary, our causal analyses demonstrate that dependence and interdependence provide unique explanatory information and have distinct, non-redundant patterns of relationship with other frequently studied constructs. We conclude that some inconsistent findings in dependence and interdependence research result from not capturing the complete interdependence structure within the studied relationships. Our field would benefit from research that probes the conceptual domain of interdependence and how it differs from dependence, from new measures of interdependence that go beyond simply combining measures of own and partner dependence, and from theoretical development regarding how the effects of interdependence differ from those of more-frequently studied unilateral dependence.

Relationship context moderation analyses

We conducted moderation analyses of all pairwise correlations between dependence and interdependence and the variables they directly or indirectly affect in our causal model when our sample included at least 10 effects for that correlation (Zablah et al. 2012). We used meta-regression to examine moderation of both own and partner dependence correlations with own relationship quality, own RSIs, cooperation, and own performance, and of interdependence correlations with cooperation. We were unable to examine moderation of interdependence effects on RSIs or performance due to the small number of raw effects in our source studies.

To test H2 and H3, we used dummy variables to classify relationship type and product type. We coded relationship type either as a "channel relationship" (=1), when the downstream party is a reseller of the supplier's products, or as a "customer relationship" (=0) when the downstream party is an end user of the supplier's products. We coded product type purchased by the downstream partner as "services" (=1) or "goods" (=0). Results are summarized in Table 5.

As we hypothesized, the positive effects of own dependence on own relationship quality, cooperation, and own performance and the positive effects of partner dependence on own relationship quality, RSIs, and performance are all greater in channel relationships than in customer relationships. Contrary to our hypothesis, own dependence is more positively related to own RSIs in end-user customer relationships. There is no moderation of partner dependence on cooperation. With the exception of RSIs, the positive effects of own and partner dependence are stronger in channel relationships, while the positive effect of interdependence magnitude on cooperation is stronger in end-user customer relationships. Perhaps interdependence is less expected in end-user customer relationships ("The customer is king!") than in channel relationships, so that it has greater beneficial implications when it is present. Hypothesis 2 is predominantly supported for dependence, but not for interdependence.

We hypothesized that effects of dependence and interdependence would be stronger in service-based than goods-based relationships. Correlations between a party's own dependence and its RSIs, its performance and cooperation are all stronger for services than goods-based relationships, with the moderation effect of the own dependence → own performance relationship being particularly strong. The only exception is the relationship of own dependence and own relationship quality, which becomes slightly weaker in services than in goods exchanges. This suggests that the inherent nature of services may require more enmeshed forms of relational exchange in order to maximize value and that a party reaps more favorable outcomes from greater dependence in service relationships than in goods-based relationships. Hypothesis 3 is predominantly supported for own dependence. Moderation tests for partner dependence and interdependence could not be performed as no source studies in our sample examined services.

The results of our moderator analyses indicate that it is important to take relationship type and product type into consideration when examining dependence or interdependence. The context moderation of own and partner dependence is consistent with our expectation that dependence generally has greater impact in channel relationships and in service-based interactions, but the only effect of interdependence we can examine is not moderated in the same way. Our

Table 5 Moderator analyses

	Sample weighted reliability- adjusted average *r*	Relationship context		Dependence content (%)		
		Channel (=1) vs. customer (=0) relationship	Services (=1) vs. goods (=0)	Relationship value dependence content	Switching cost dependence content	General dependence content
	r	B	B	B	B	B
Correlate of own dependence						
Own relationship quality	.42**	.01*	−.01*	.30**	−.19**	−.35**
Own relationship-specific investments	.36**	−.17**	.23**	.08**	.11**	−.27**
Dyadic cooperation	.29**	.07**	.20**	.17**	−.10**	−.18**
Own performance	.23**	.12**	.60**	.30**	−.34**	−.31**
Correlate of partner dependence						
Own relationship quality	.22**	.10**	−.02	.13**	.08	−.21**
Own relationship-specific investments	.25**	.22**	–	.12**	.16	−.27**
Dyadic cooperation	.34**	−.00	–	−.22**	.23**	−.01
Own performance	.13**	.10**	–	.04	.16**	−.19**
Correlate of interdependence magnitude						
Dyadic cooperation	.38**	−.22**	–	.04	−.62**	.19**
Correlate of asymmetry favoring partner						
Dyadic cooperation	−.09**	−.08	–	.20**	.01	−.37**

* $p<.05$, ** $p<.01$ (two-tailed). B is the meta regression coefficient. Analysis was restricted to construct pairs for which source studies in our meta-analysis reported at least 10 raw effects and when the causal model analyses indicated a direct or indirect path between the constructs. Dash indicates lack of variation in the product type (e.g., all are goods) so regression could not be performed

context moderation analyses complement our causal analysis and provide additional evidence that the conceptual domain of interdependence is not fully captured by the aggregation of own and partner dependence and that effects of interdependence can differ significantly from those of dependence.

Dependence content moderation analyses

Coding of dependence measures' content Dependence has been measured with diverse scales and items. We sought to determine the type of dependence each measurement scale assesses. *Relationship value dependence* (RV Dep) measures capture ongoing, realized, relational value that would end at termination, while *switching cost dependence* (SC Dep) measures identify currently dormant costs that would become manifest and incurred upon relationship termination. Measures of *general dependence* (Gen Dep) take various forms, but all involve an unspecified need to maintain the relationship, one not specifically rooted in ongoing net benefits or latent costs. Definitions and examples are provided in Table 6. Two coders independently categorized each item in every dependence scale in our source studies according to these definitions, yielding an overall agreement of approximately 96%. Differences were resolved through discussion (Szymanski and Henard 2001). Appendix B offers illustrative examples of dependence content coding.

Initially, we planned to categorize each measure according to its dominant RV Dep, SC Dep, or Gen Dep content using a 60% majority rule, classifying all remaining non-dominated scales as general dependence. We found few extant multi-item scales comprised of items *all* measuring the same dependence type. In over 10% of cases, no dependence type constituted a majority of the scale. More troubling, we observed vast differences in the compositions of scales dominated (60% or more) by the same dependence type. Some scales include items focusing on both Gen Dep and RV Dep (e.g., Andaleeb 1996), others Gen Dep and SC Dep (e.g., Lusch and Brown 1996), yet others RV Dep and SC Dep (e.g., Kumar et al. 1995a), and some include all three dependence types (e.g., Palmatier et al. 2007a). Certainly, all these variants assess dependence, of some sort, but we theorize that subtle differences in the relative emphasis on aspects of dependence in operationalizations could have systematic effects.

Therefore, we sought a finer-grained approach than simply classifying each measure into a single category. We devised a method to encode full information about the content and composition of each scale by calculating the percentage of RV Dep content, SC Dep content, and Gen Dep content in that scale. For example, the content profile of a scale composed wholly of general dependence items is 0-0-100 (0% RV Dep, 0% SC Dep, and 100% Gen Dep) while a highly mixed scale's content profile could be 50-20-30. This allows detection of differential effects of nuances implicit in the composition and content of dependence measures.

Table 6 Dependence constructs and example operationalizations

Construct	Definitions	Sample measure	Characteristics of measurement (Example)[a]
Relationship Value Dependence		Value received	Value received from current relationship, importance of value or partner role, share of business (Kim 2000)
	The need to maintain a relationship due to irreplacable unique value received from that relationship.	Replaceability of value	Explicit discussion of replaceability of value or implicit indication of replaceability by noting "comparable" alternatives (Bansal et al. 2004)
		Loss of value	Explicit discussion of irreplaceability of value or absence of comparable alternatives, implying loss of value (Barry et al. 2008)
Switching Cost Dependence		Comprehensive switching costs	Anticipated costs of disengaging from, searching for and selecting, and initializing replacement(s) for a focal partner (Ping 1993)
	The need to maintain a relationship due to the latent costs that would be incurred if that relationship ends.	Disengagement costs	Anticipated costs of ending a focal relationship (Morgan and Hunt 1994)
		Transition costs	Anticipated costs of searching for and selecting replacement(s) for a focal partner (Patterson and Smith 2003)
		Replacement costs	Anticipated costs of securing and initializing replacement(s) for a focal partner (Heide and Weiss 1995)
General Dependence		Unspecified dependence	Report of dependence on partner without specifying basis (Van Bruggen et al. 2005)
	General, non-specific evaluation of the need to maintain a relationship.	Ease of replaceability	General ease or difficulty in replacing partner that does not specify basis in benefits or costs (Andaleeb 1996)
		Availability of alternatives	Unspecified alternatives, current or potential partners, or potential to bypass partner without implication about the ease of replacing the current relationship with an alternative (Skinner and Guiltinan 1985)

[a] The scales used in examplars are composed predominantly of items assessing the specified dependence content (relationship value dependence, switching cost dependence, general dependence); typically they are not composed of 100% dominant content

Moderation analyses Meta-regression was used to examine the methodological moderators of dependence type. Results are summarized in Table 5.

The positive effects of own dependence on three of the four mediating and outcome variables are moderated oppositely by the RV Dep content and SC Dep content of the measures. The positive effects of own dependence on own relationship quality, cooperation, and own performance are enhanced as RV Dep content increases, but as SC Dep content increases, the positive effects of own dependence are mitigated. Similarly, the positive effect of partner dependence on cooperation is enhanced as SC Dep content increases and reduced as RV Dep content increases.

Dyadic cooperation is the only variable for which moderation effects can be examined for all four dependence and interdependence variables. It is notable that in each case the moderation of RV Dep differs from that of SC Dep. The positive effect of own dependence on cooperation is strengthened as RV Dep content increases and weakened as SC Dep content increases, while the opposite is true for partner dependence. The positive effect on cooperation of interdependence magnitude is reduced greatly as measures increasingly emphasize SC Dep content and, similarly, the negative effect of asymmetry favoring the partner is reduced, becoming less negative as RV Dep content increases.

For four of the correlates analyzed in our methodological moderator analyses, the moderation effects of RV Dep and SC Dep content are in the opposite direction. For five of the correlates, the direction of Gen Dep content moderation differs from that of both RV Dep and SC Dep content. Of the ten correlations for which moderating tests were conducted, RV Dep content moderated eight, SC Dep content moderated seven, and Gen Dep content moderated

nine. Hypothesis 4 is supported as the RV Dep, SC Dep, and Gen Dep content of the measurement scales used have different moderating effects.

Discussion of dependence content findings and implications It is striking that *no* effects of own or partner dependence are strengthened as Gen Dep content increases. Instead, the positive effects of both own and partner dependence on own relationship quality, RSIs and performance are all weakened by greater Gen Dep content, as is the effect of own dependence on cooperation. In contrast, both the positive effect of interdependence magnitude and the negative effect of asymmetry favoring the partner on cooperation are enhanced as the Gen Dep content of the measures increases. We find compelling evidence that H5 is supported for dependence, but not for interdependence.

The pattern of results from our methodological moderator analyses suggest that insights could be gleaned from developing and investigating specific scales that separately measure relationship value dependence and switching cost dependence. We theorize that when a party has greater dependence based in relationship value, that dependence will be more strongly associated with more positive outcomes such as relationship quality, own performance, and dyadic cooperation. However, when dependence is based in switching costs that embody barriers to exit, that negatively-valenced dependence is likely to generate less positive relationship outcomes for the dependent party. Either a party's relationship value or switching cost dependence can provide incentive to invest in RSIs, which can increase its importance to the partner and reduce the likelihood of relationship dissolution. Although greater interdependence magnitude is associated with greater dyadic cooperation, the cooperation is likely to be significantly lower when interdependence is based in switching costs than relationship value interdependence. If both parties remain in a relationship primarily out of reluctance to bear the costs of dissolution and establishing an alternative, the discomfort of being locked into the relationship is likely to poison their interactions.

In summary, our findings compellingly demonstrate that the observed effects of dependence and interdependence are systematically altered by subtle, seemingly minor variations in the dependence measures used. The constructs of relationship value dependence and switching cost dependence are worthy of additional conceptual elaboration, measure development, and study, for they are likely to have significantly different patterns of relationship with important relational constructs and outcomes. In addition, our findings raise concerns about the use of measures that focus on general, unspecified dependence. The inherent ambiguity in general dependence measures may not effectively enable and motivate the informant to comprehensively consider all aspects and sources of dependence. Instead, general dependence measures allow idiosyncratic responses induced by salient factors in the relationship or the research methodology. We conclude that extant general dependence measures often do not effectively reflect overall dependence and that a new approach for measuring overall dependence is needed.

Limitations, implications and directions for future research

Limitations

As with any meta-analysis, our study has inherent limitations. The variables we included in the IS-RBV framework are constrained to those for which sufficient effects are available in the sample. Although we found significant moderation effects in our study, parameter estimates can also be affected by other contextual variables that are not included (e.g., competitive intensity of the industry). In nearly all source studies, both own dependence and partner dependence are reported by the same respondent/informant and interdependence magnitude and asymmetry are constructed by integrating those components. Although the focal party's attitudes and behaviors would be motivated by its own perceptions of the interdependence structure, performance outcomes and dyadic behaviors like cooperation are affected by both partners' perceptions. However, despite this difficulty, we nonetheless find differential effects on dyadic cooperation and performance.

Managerial implications

Although the drive for autonomy may motivate managers to limit their firm's dependence on a relational counterpart, dependence is best viewed as a starting point for building greater relationship quality with the partner. As relationship quality improves, one is willing to invest more and restrict one's options to a greater extent when the promise of enhanced returns justifies those actions. Our findings suggest that making such investments pays off with greater dyadic cooperation and, ultimately, performance. A party's own dependence especially pays off with more favorable outcomes in service relationships; overcoming reluctance to deepen dependence is particularly critical for consumers and managers of firms in those contexts.

Directions for future research

Consideration of relationship context Ideally, important aspects of relationship context should be directly integrated into hypotheses and model development. At minimum, we advise explicit contemplation of whether relationship type and product type are boundary conditions beyond which generalization of findings is unwarranted. Why and how do relationship type

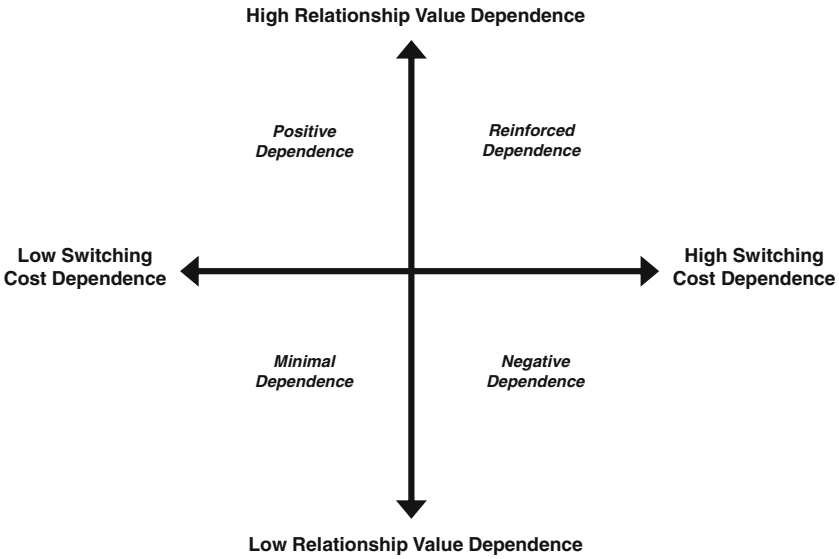

Fig. 3 Bi-Dimensional conceptualization of dependence

and product type alter the role of dependence? What characteristics distinguish between different contexts? How do they impact dependence or interdependence or moderate their effects?

Significant contributions can be made by theoretically identifying characteristics of relationship context and empirically examining their effects. For example, both own and partner dependence are more positively associated with performance in supplier–reseller channels than in supplier relationships with end-user customers. Perhaps the implicit superordinate goal in channel relationships—serving the same ultimate customers—may be the mediating mechanism that alters relational dynamics between supplier and reseller, such that dependence is viewed as less threatening. The rationale also may be operating in some types of service-based relationships, as both supplier and buyer realize that better service is likely to be delivered if both have motivational investments. If it is the internalization of the inherent alignment of interests and the expectation of win-win solutions that account for dependence's greater impact on performance in channels and service relationships, then goods-based and customer relationships high in those qualities should experience similar payoffs of dependence.

Research design: dependence and interdependence Our causal analysis and moderation analyses tell the same story—dependence and interdependence have different patterns of direct and moderated effects on the mediating and outcome variables we studied. Dependence effects on performance are predominantly mediated by relationship quality, RSIs, and cooperation. Interdependence does not impact relationship quality, after accounting for dependence effects. The effects of interdependence magnitude and asymmetry on performance are only partially mediated, suggesting that interdependence also impacts relational and performance outcomes through other mediating mechanisms not examined in our meta-analysis. Limiting one's focus to dependence is likely to *underestimate* the interdependence structure's full impact by failing to account for the additional, unique contribution of unmeasured interdependence.

Researchers who theoretically anticipate a role for dependence are advised to incorporate interdependence as well into research designs. Both will not always be relevant; some variables of interest will be impacted only by dependence while others only by interdependence. However, at this point, there is scant theoretical rationale or empirical foundation to predict when dependence and interdependence will have distinct, complementary, synergistic, or redundant effects. Future research is needed to theoretically distinguish the domains of dependence versus interdependence magnitude and asymmetry, to develop measures that specifically isolate and assess each of these constructs, and to offer clarity regarding their respective roles.

Conceptual development and measurement of dependence and interdependence Most researchers have measured interdependence by simply adding (e.g., Kumar et al. 1995a, 1998) or multiplying (e.g., Jap and Ganesan 2000) own dependence and partner dependence, but our findings suggest that interdependence is more than simply the aggregation of those parts. Research focusing on how the *nature* of interdependence differs from dependence is needed. We theorize that one's conscious awareness of and tacit sense of interdependence with a partner arises from myriad behaviors, signals, and elements within the relationship. More direct, holistic evaluations of interdependence that are internally oriented to the focal party–partner relationship may be needed. Inspiration could be drawn from the exchange-level resource-based view

(Kozlenkova et al. 2014) or power resources theory (Scheer and Stern 1992). It may be fruitful to theoretically explicate potential dimensions of interdependence, perhaps by drawing upon relationship marketing theory (Palmatier et al. 2007b). For example, interdependence may be comprised of economic (e.g., joint spending on marketing tactics), interpersonal (e.g., cross-boundary teams) and structural (e.g., electronics systems integration) dimensions. Direct measures of interdependence that capture explicit as well as tacit bonds within the focal party–partner relationship are needed.

Similarly, researchers should invest greater effort in considering the nature of interdependence asymmetry that is relevant to the research question. When the relative position of focal party and partner are paramount, and the degree of asymmetry is irrelevant, focusing on simple relative dependence (own dependence minus partner dependence) is a viable approach. However, if interdependence symmetry has theoretical relevance for the hypotheses and constructs under investigation, it is advisable to use spline variables to investigate the focal party's *true relative dependence* (when own dependence > partner dependence), the partner's true relative dependence (when own dependence < partner dependence), and symmetry (when own dependence = partner dependence). (e.g., Kumar et al. 1998). Regardless, future efforts to develop alternative direct measures of interdependence asymmetry that are not constructed from own and partner dependence are advised.

In order to advance the measurement of dependence, researchers must first clarify the dependence construct that is relevant for their theory, model and/or context. We agree with Heide and John: it is "better to view dependence as a multidimensional construct. A closer examination of each of its aspects is warranted" (1988, p. 34). We contend that a full understanding of the conceptual domain of dependence requires consideration of both relationship value dependence, that arising from the unique, irreplaceable value presently received from the relationship, and switching cost dependence, that driven by the latent anticipated costs that would become manifest if the relationship ends. Figure 3 illustrates how this bi-dimensional conceptualization of dependence could enrich our perspective. Positive dependence based in value currently received may well lead to very different attitudes and behaviors than negative dependence based in projected disengagement, transition, and replacement costs. Are relationships most stable when relationship value dependence is reinforced with concurrent switching cost dependence or when only one type of dependence is dominant? Future research is needed to examine this and similar questions.

Our research reveals different patterns of effects associated with the relationship value, switching cost, and general dependence content of measures. Therefore, we suggest that researchers separately measure relationship value dependence and switching cost dependence, taking care to ensure that the scales contain 100% appropriate content. By measuring both component dimensions of dependence, researchers can replace more ambiguous general dependence measures by modeling relationship value dependence and switching cost dependence as indicators of the higher-order construct of overall dependence.

Conclusion

In conclusion, this study highlights several issues that contribute to inconsistent findings in dependence research. Some inconsistencies may be artifacts of not simultaneously capturing both dependence and interdependence, others are driven by unaccounted differences in relationship context, and yet others arise from subtle variation in the content and composition of dependence measures. We offer tangible suggestions regarding the conceptualization and measurement of dependence and interdependence and for the research design of future studies. Despite the plethora of previous research, there is much we do not yet understand. Dependence and interdependence research offers fertile ground for the development of theoretical and conceptual insights and important managerial implications.

Appendix A

Sample statistics	
Total number of studies in meta-analysis	211
Sources	
Marketing journals	
International Journal of Research in Marketing	4
Journal of Marketing	22
Journal of Marketing Research	11
Journal of Retailing	12
Journal of Services Research	4
Journal of the Academy of Marketing Science	20
Marketing Science	1
Other Marketing, Services, Retailing & Logistics Journals	93
Management Journals	42
Umpublished study and additional data from a study published in a journal listed above	2
Publication date	
Pre-1990	8
1990's	38
2000's	104
2010+	61

Appendix B

Examples of dependence measure content coding

Relationship value dependence		
Ping, Jr., Robert A. (1993)	Alternative attractiveness	All in all, the alternative wholesaler would be much more fair than the current wholesaler.
		Overall, the alternative wholesaler's policies would benefit my company much more than the current wholesaler's policies.
		I would be much more satisfied with the product and service available from the alternative wholesaler than the product and service provided by the current wholesaler.
		In general, I would be much more satisifed with the alternative wholesaler than I am with the current wholesaler.
Eggert, Andreas and Wolfgang Ulaga (2010)	Customer value	Compared to the second supplier . . .
		the main supplier adds more value to the relationship overall
		we gain more in our relationship with the main supplier
		the relationship with the main supplier is more valuable
		the main supplier creates more value for us when comparing all costs and benefits in the relationship
Frazier et al. (1989)	Role perfomance	How well the manufacturer compared to industry average on . . .
		product quality
		allocation & delivery of goods
		reimbursement for unsold damaged merchandise
		interfirm assistances
		cooperativeness of the manfacturers' reps
Gundlach, Gregory T. and Ernest R. Cadotte (1994)	Dependence	% of total gross profit margin derived from the channel partner
Ganesan (1994)	Perceived retailer dependence	We are important to this retailer.
		We are a major supplier to this retailer in our product category.
		If we discontinued supplying to this retailer, this retailer would have difficulty making up the sales volume in our product category.
Kumar et al. (1995a)	Dealer dependence	There are other suppliers who could provide us with comparable product lines.
		Our total costs of switching to a competing manufacturer's line would be prohibitive. (*Switching Cost Dependence item*)
		It would be difficult for our firm to replace the sales and profits generated from this supplier's line.
Switching cost dependence		
Bell et al. (2005)	Switching costs	If I changed firms, it would take a lot of effort to find a new one
		If I changed firms, it would take a lot of time and effort on my part to explain to the new financial adviser what I like and what I want
		If I were to switch firms, I would have to learn how things work at the new one
Eggert, Andrea and Wolfgang Ulaga (2010)	Dependence	*If we decided to stop buying from the main supplier*, *we could easily replace its volume with purchases from other suppliers* (*r*) (*Relationship Value Dependence item*)
		Our production system can be easily adapted to using components from a new supplier (r)
		Dealing with a new supplier would only require a limited redesign and development effort on our part (r)
General dependence		
Cannon et al. (2010)	Availability of alternatives	There are many suppliers available for this product (r)
		There are few vendors able to provide this product
		This is not a very competitive supply market

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