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A Measure of Variations in Internal Social Capital Among Family Firms

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Drawing on the social capital literature, this study develops a new measure to assess the internal social capital using a sample of family firms and its effect on economic and noneconomic performance. We collected data from two independent samples to explore the importance of family businesses' internal social capital as assessed by a new instrument— the internal social capital among family business (ISC-FB). Results from confirmatory factor analyses, convergent and discriminant validity assessments, and predictive and incremental validity offered support for the ISC-FB's construct validity. Finally, we cross-validated the hypothesized factor structure with a second sample of family firms. Implications and future research using this measure are proposed.

Introduction

Research focusing on family business has typically adopted one of several theoretical perspectives, to include agency and stewardship theories (e.g., Chrisman, Chua, Kellermanns, & Chang, 2007; Miller, Le Breton-Miller, & Scholnick, 2008; Schulze, Lubatkin, Dino, & Buchholtz, 2001), as well as perspectives built around the resource-based view (RBV) of the firm (Barney, 1991; Habbershon & Williams, 1999). Recently, scholars have also theorized that a social capital perspective may offer a unique position from which to study family firms (e.g., Arregle, Hitt, Sirmon, & Very, 2007; Pearson, Carr, & Shaw, 2008), with the goal of providing a clearer picture of some of the unique characteristics of family businesses. In this regard, social capital is suggested to capture the collective actions and resultant outcomes associated with the interindividual interaction of groups (Adler & Kwon, 2002).

The application of social capital theory in organizational settings was initially proposed by Nahapiet and Ghoshal (1998), who defined it as ". . . the sum of the actual and

potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (p. 243). Given that social capital reflects a complex set of dynamic relationships that exist within a group, it has been argued that the social capital of firms can be difficult to quantify and imitate (Dess & Shaw, 2001), and is often based upon the unique circumstances and interactions present within a specific collective. Owing to the mutual interdependence and complexity of these relationships, this field of study has become increasingly fragmented and somewhat inconsistent in its application.

In consideration of this fragmentation, Payne, Moore, Griffis, and Autry (2011) contribute to the study of social capital by not only reviewing its organizational applications over a 20-year period, but also by creating a typology that serves to isolate the areas of prior empirical evidence. These scholars found that social capital theory has been primarily studied from both internal/external and individual/collective viewpoints, which subsequently creates four concentrations of research within this literature. Their typology allows scholars to focus their efforts in a more consistent manner and to identify areas that may be lacking in development.

With the aforementioned in mind, the purpose of our study is threefold. First, we seek to contribute to the literature by linking family business and social capital in a way that is consistent with Payne et al.'s (2011) classification, where we study the variations in internal social capital among family firms. Studying family firms from a social capital perspective provides specific attention to how a potentially dominant group (i.e., the family) may appropriate the advantages associated with social capital (Arregle et al., 2007). Following the suggestion of Sharma (2008), we believe that this may be an important step in creating a social capital model within family firms. Second, we intend to develop a new measure to assess internal social capital, which has been validated in a family business context, and which incorporates the structural, cognitive, and relational dimensions as outlined by Pearson et al. (2008). To this end, and following recommended psychometric guidelines, we demonstrate the utility and construct validity of our new measure. Finally, we seek to contribute to future research concerning family member-related social capital as it relates to family firm behavior and performance outcomes, given prior work that has identified both outcome types as being important to family firms (Chrisman, Chua, & Zahra, 2003). The theoretical background associated with this effort is provided afterward.

Social Capital Within Organizations

Scholars often have conceptualized social capital as a distinct set of resources embedded in relationships (e.g., Burt, 1992). When considering Burt's perspective, it primarily focuses on external linkages and what benefits arise from structural holes found within the network of relationships (Adler & Kwon, 2002). Nevertheless, social capital has also been explained as an internal phenomenon as "some aspect of social structure that facilitates certain actions of individuals within the structure" (Coleman, 1990, p. 302). Adler and Kwon synthesized the differences among these social capital sources as a disparity between "bridging" social capital and "bonding" social capital.

Bridging social capital derives from an external focus on direct or indirect links between those within the collective network and those outside of the collective. The benefits of bridging social capital may be far-reaching and can include increased ability to gather information, ability to gain access to power or better placement within the network, or ability to better recognize new opportunities (Adler & Kwon, 2002). Conversely,

scholars have also argued that dense networks are formed within collectives through the assistance of bonding social capital. From these dense networks, resources can be developed over time, to include trust and cohesiveness (Nahapiet & Ghoshal, 1998; Sharma, 2008). For our study, we focus on this internal (bonding) source of social capital, using the context of the family firm.

In addition to the identification of social capital (i.e., bridging vs. bonding), Nahapiet and Ghoshal (1998) proposed that internal social capital is also composed of three distinct dimensions. These dimensions include a structural dimension that reflects the patterns and strength of ties within the members of a group. The structural dimension of social capital includes those resources that facilitate the interaction and communication of information, as well as the degree to which the structural characteristics of the organization provide the network through which facilitated action can occur. Second, social capital resources include a cognitive dimension that represent the ". . . shared representations, interpretations, and systems of meaning among parties" (Nahapiet & Ghoshal, p. 244). The cognitive dimension reflects the shared purpose and meaning created through lasting relationships within the organization or group. Finally, social capital resources are also composed of a relational dimension, which represents the trust, obligations, and commitments that result from the personal relationships that are created through the structural and cognitive dimensions.

A Typology of Social Capital

As mentioned, researchers have developed a typology that characterizes social capital along four distinct concentrations (Payne et al., 2011). These concentrations (or quadrants) reflect a two-by-two matrix, with axes that represent the external and internal aspects of social capital (bridging vs. bonding) and individual and collective aspects of social capital. Based upon Payne et al.'s typology and our own conceptualization of internal social capital in family firms, the development of our measure is theoretically grounded within Quadrant 2 (p. 497) of their typology; specifically, our new instrument reflects a collective/internal perspective. Although Payne and his colleagues call for multilevel research, we did not focus on the individual level because studies in this area concentrate primarily on the ways that individuals utilize resources and assets obtainable through their social relationships for personal benefit. It is our belief that the use of the family firm context may not provide a substantial addition to this aspect of the literature, because the difference between the ways in which members of family and nonfamily firms draw upon assets and resources from their social relationships for personal gain may not be significant. On the other hand, the family unit, as a distinct faction within a firm, provides this literature with a unit of analysis that is a consistently dominant group possessing the ability to alter the vision and direction of the overall collective (Chua, Chrisman, & Sharma, 1999). Additionally, our concentration on internal rather than external social capital stems from a desire to better understand the effects of the family unit on the development of social capital prior to increasing the complexity of this development by also including an external focus.

Payne et al. (2011) identify only nine empirical articles in major management journals that have focused on the collective/internal quadrant. These articles have examined the relationship of internal social capital at the organizational level with turnover (Shaw, Duffy, Johnson, & Lockhart, 2005), innovation (Subramaniam & Youndt, 2005; Tsai & Ghoshal, 1998), performance in work teams or groups (Balkundi, Kilduff, Barsness, & Michael, 2007; Oh, Chung, & Labianca, 2004; Reagans, Zuckerman, & McEvily, 2004), diversity amongst work teams (Reagans & Zuckerman, 2001), compensation of

non-dedicated cross-functional teams (Wang & He, 2008), and entrepreneurial firm survival (Kalnins & Chung, 2006).

Within this research a number of analytic techniques have been utilized, and similar to the overall study of social capital, few studies have relied on construct valid instruments specifically designed to gauge internal social capital. For example, research within the collective/internal quadrant of social capital has used event history analysis, demographic data and network analyses, and game theory procedures. In fact, Subramaniam and Youndt (2005) employed a 5-item social capital measure that only assessed the "the overall ability to share and leverage knowledge among and between networks" (p. 455), while both Balkundi et al. (2007) and Shaw et al. (2005) used an instrument that assessed the centrality of an actor within the network. Thus, there exists considerable additional research necessary to successfully measure internal social capital, and in particular, the antecedents and outcomes associated with this construct within family firms.

Internal Social Capital and the Family Firm

In the family firm, where a family firm is "a business governed and/or managed with the intention to shape and pursue the vision of the business held by a dominant coalition controlled by members of the same family or a small number of families in a manner that is potentially sustainable across generations of the family or families" (Chua et al., 1999, p. 25), it is important to understand the sources of internal social capital.[1] This importance derives from the fact that a powerful group with the ability to shape and pursue the vision of the business for long periods of time could create significant benefits among heterogeneous groups within a family firm, and in turn, affect the ability of organizational social capital to form (Arregle et al., 2007; Gersick, Davis, Hampton, & Lansberg, 1997). Moreover, the complexity of social capital relates to many issues that can exist within the family firm, including "norms, values, cooperation, vision, purpose, and trust" (Pearson et al., 2008). Finally, the family's long-developed relationships within the family business have the ability to influence social capital. Thus, social capital theory's application to the study of family business is an appropriate theoretical lens for identifying potential areas of competitive advantage for these firms.

With the conceptualization developed by Nahapiet and Ghoshal (1998), social interactions, structure, and strength of the ties that exist within the family can influence the development of internal social capital. Research indicates that the process associated with the creation of social capital is tied strongly to these structural components and that family members within firms are able to take advantage of their own family ties and build upon their existing patterns of relationships to benefit the family firm (Arregle et al., 2007). This ability to leverage the family structure to benefit the organization reflects a concept known as appropriability, which represents how the relationships in one social structure can be easily transferred to another structure (Coleman, 1988). Since families can and do depend upon their family relationships "to get things done," the structural dimension of social capital serves as an important resource for the creation of internal social capital within family firms.[2]

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1. Unless otherwise noted, and for the purposes of readability, references to internal social capital in family firms and the ISC-FB measure refer to the collective/internal aspects of social capital as described by Payne et al. (2011).

2. It is possible that family members not working in the family firm could affect family-related internal social capital in the business.

When considering the cognitive dimension of social capital and family firms, we see that research has shown family members within family firms often have a deeply embedded, collective understanding of their firm's culture, often creating a shared vision and purpose that nonfamily firms cannot easily imitate (Lansberg, 1999). This collective vision allows the family firm to develop a strong and lasting degree of social understanding, and thus, produce a level of internal social capital within their firm that can be harnessed to create economic and noneconomic value to the firm.

Finally, the relational dimension is developed from and serves as an influence to the other dimensions, through the appropriable family relationships, shared vision, and common purpose that represent the structural and cognitive dimensions. The relational dimension represents the norms of obligation, trust, and a level of family and firm identity that can exist within family firms and that are not as easily developed in nonfamily firm situations. In essence, the relational dimension serves as the key family firm resource that serves to create the unique and valuable capabilities for family firms.

Each of the social capital resource dimensions have, as their outcome, organizational capabilities that ultimately lead to firm success. We believe the use of a social capital perspective in this way provides a useful framework to begin to examine empirically how the antecedents and outcomes of internal social capital in family firms unfold just as Tsai and Ghoshal (1998) and Leana and Pil (2006) believed these dimensions would help them study value creation and student performance. And yet, a critical shortcoming associated with the study of internal social capital in family firms is the need to develop measures that can be used within this context. Based upon our examination of survey instruments currently in use, no measure of internal social capital directly addresses the family firm context.

Overview of the Methodological Approach for the Present Study

The current research effort seeks to validate our new internal social capital measure (internal social capital among family business [ISC-FB]) for use in family business contexts, thereby addressing theoretical and practically relevant calls for the development of reliable and valid tools to assess performance in family firms. In doing so, we followed recommended steps toward developing a psychometrically sound measure (Hinkin, 1998). In a preliminary study (described afterward), we identify potential items for our newly proposed measure and assess items' content validity. The main study begins by establishing factorial validity and reports on a series of item level as well as convergent and discriminant validity analyses. We then evaluated the new measure's incremental validity by linking it to firm capabilities (viz., knowledge sharing, group cohesion), noneconomic outcomes (viz., work satisfaction, family satisfaction), and firm performance.

The three dimensions that comprise internal social capital resources in family firms, namely, the structural, cognitive, and relational dimensions, are also defined for the purposes of scale development. The structural dimension is defined as "Those resources that represent the social interactions and communication, including the patterns and strength of ties, among members of a family business." The cognitive dimension is defined as "Those resources that provide the shared meaning, vision, and purpose among members of a family business." Finally, the relational dimension is defined as "Those resources created through personal relationships, to include trust, norms, obligations, and identity among members of a family business." The results and implications of this scale development are presented afterward.

Preliminary Study: Development of the ISC-FB Measure for Family Firms

The initial step of measure development is the creation of items to assess the proposed construct. Thus, in this preliminary study, we first explain how we generated an initial set of items. We then detail the results of a content validity assessment (cf. Hinkin, 1998).

Item Generation

Given a strong theoretical base (see, e.g., Adler & Kwon, 2002), an initial set of items was generated following a deductive approach (i.e., using existing research that could be adapted to fit our definition; Hinkin, 1998). Recent research by Leana and Pil (2006) introduced an 18-item measure of internal social capital. For our purposes, items from Leana and Pil were adapted to reflect the family firm context. For example, a shared vision item ("Teachers share the same ambitions and vision for the school") was modified to incorporate family members in the firm (i.e., "Family members who work in this firm share the same vision for the future of this firm"). Additionally, we supplemented these items by reviewing the extant literature and culling items from an alternative measure of social capital in family firms, termed the family influence on power, experience, and culture (F-PEC) scale (Klein, Astrachan, & Smyrnios, 2005). Specifically, we used 11 items from the culture subscale of the F-PEC, which the authors felt best reflected the content domain for the proposed ISC-FB (Lansberg, 1999). Finally, the authors generated additional items, which they believed reflect the ISC-FB content domain. In total, we developed a pool of 35 candidate items.

Content Validity Assessment

Following recommendations by Schriesheim, Powers, Scandura, Gardiner, and Lankau (1993) and Hinkin (1998), we then asked naïve judges (viz., undergraduate entrepreneurship students) to participate in a content validity assessment. This process was composed of several steps (cf. Schriesheim et al.). As these scholars suggest, we provided each subscale definition of the ISC-FB (i.e., the structural, cognitive, and relational) on a separate page, with all 35 proposed items being listed and rated for all three component definitions. In total, 40 entrepreneurship students were asked to judge the degree to which each of the 35 candidate items matched the specific definition on the page, using a 5-point rating scale, with 1 = representing no match and 5 = representing a perfect match. The content validity process yielded 105 ratings for the ISC-FB (i.e., each judge evaluated all 35 items for each definition), which were then used to create a Q-correlation matrix (Schriesheim et al.).

A Q-correlation matrix (item-by-item matrix of correlations between items) was calculated, and this matrix was factor analyzed using principal components analysis (as recommended by Schriesheim et al., 1993). Essentially, this analysis has been recommended by methodologists because it reduces a set of potentially correlated observations into a smaller set of uncorrelated values, called principal components, that reveal the internal structure of the data by explaining as much variance as possible. We extracted five factors, with the largest single factor having an eigenvalue of 16.19 with a variance explained of 46.25%. The remaining four factors collectively explained 32.42% of the variance. The vast majority of the adapted Leana and Pil (2006) items loaded on the first factor along with three F-PEC items, with the other items cross-loading on the extraneous

factors. Using Ford, MacCallum, and Tait (1986) as a guide, we eliminated items loading on the first factor that likewise exhibited cross-loadings greater than .40. This resulted in 23 initial items for the proposed ISC-FB scale. As mentioned previously, all wording for each of the 23 items referred to the "family members in the firm." The application of a referent shift (e.g., from "I" to "we") has been shown to improve criterion-related validity (Arthur, Bell, & Edwards, 2007).

Main Study: Instrument Validation

Our purpose in this main study was to further refine the ISC-FB with the goal of demonstrating construct validity, to include predictive and incremental validity with our proposed measure. The analytical approaches used to accomplish this goal include conducting confirmatory factor analyses, as well as a series of hierarchical regression analyses.

Sample and Procedures

We utilized a panel managed by a marketing and surveying company that focused on small business owners. The first phase of data collection involved prescreening in which a random sample of panelists were contacted by e-mail and were invited to participate in a study of small business owners. The following screening criteria were used, to ensure that sole proprietorships were not included and that family firms were selected for the sample. First, we screened based upon ownership status, such that the respondent was either a founder, cofounder, spouse of a founder, or a first or second generation owner of the business. Our second question screened out businesses with fewer than one employee. Finally, we screened respondents by asking "Do you consider your firm to be a family business; and there is a hope or desire that a family member will have leadership control of the business in the future?" As such, our focus on founders/owners as our key respondents to questions regarding the collective/internal social capital within the firm does not capture the attitudes from nonfamily managers/workers, nor does it take into account the perceptions of family members outside the family firm itself. However, for the purposes of this study we feel our choice of founders/owners reflects our desire to capture the perspectives of this key decision-making person within the family firm.

This data collection process produced usable responses from 341 family business respondents, with an average firm age of 17.79 years. The sample consisted of 83% founders or cofounders, with an average of 15 years of prior work experience. The average age was 51 years old, with males representing approximately 47% of the sample. Finally, 46% of the respondents had at least a college education. With regard to the industry characteristics, respondents selected from 18 different U.S. Census Bureau industry codes to categorize their family business, with the construction and retail trade industries being the most frequently selected industry.

Measures

Unless otherwise noted, all items were measured using a 5-point Likert-type scale ranging from 1 = strongly disagree to 5 = strongly agree.

Family to Work Support and Positive Family Spillover. An important requirement to test for the empirical utility of a new measure is to compare it with other measures that

potentially capture the same underlying construct. This is often conducted by identifying and using existing measures that are, roughly speaking, conceptually similar. By controlling for these established measures and examining the incremental validity added by the proposed measure, support for the use of the proposed measure is suggested. Thus, for our development of the ISC-FB, we identified two such constructs. "Family to work support" is an 11-item measure that represents the degree to which the respondent's family is interested and supportive of the person's work arrangements and responsibilities (King, Mattimore, King, & Adams, 1995). An example item is "My family members seem very interested in hearing about my work day." For "positive family spillover," we used eight items from Kirchmeyer's (1992) "perceptions of nonwork-to-work spillover" measure. An example item is "My family gives me support so I can face the difficulties of work." Cronbach's alpha for these measures are .95 and .94, respectively.

In addition to our conceptually related variables mentioned previously, our proposed ISC-FB measure should also be examined regarding its relationship to theoretically proposed outcomes. These outcomes can include proximal and distal constructs that appropriately capture the underlying theoretical framework. These measures are provided afterward.

Knowledge Sharing and Cohesion. To capture organizational capabilities, we included two established constructs previously suggested to tap such capabilities. Knowledge sharing is measured using six items from Lu, Leung, and Koch (2006), which we adapted to capture the degree to which knowledge gained by a firm member is readily transferred to other members of the firm. An example item is "Individuals within our firm share with others useful work experiences and know-how." Cronbach's alpha for this measure is .94. Cohesion is measured using items adapted from a group cohesion measure developed by Podsakoff and MacKenzie (1994). An example item is "Decision-makers of this firm work together as a team." Cronbach's alpha for this measure is .96.

Work Satisfaction, Family Satisfaction, and Firm Performance. To capture outcome variables proposed by Pearson et al. (2008), three established criterion variables were assessed. Work satisfaction is measured using three items from Spector's (1985) "work itself satisfaction" measure. Cronbach's alpha is .95. For family satisfaction, the "satisfaction with family life" measure is used (Mills, Grasmick, Morgan, & Wenk, 1992). Cronbach's alpha is .93. Finally, firm performance is gauged using McDougall, Covin, Robinson, and Herron (1994) 5-item performance measure; each item identifies firm performance as it relates to a firm's competitors. Considerable research has used this particular measure of firm performance, and recent research has indicated that the use of subjective measures can be considered appropriate within certain contexts (Richard, Devinney, Yip, & Johnson, 2010). Cronbach's alpha for this measure is .94.

Controls. Firm age, ownership status, firm size (based upon the number of employees), and prior work experience of the respondent were used as control variables in the analyses.

Main Study Results

Confirmatory Factor Analysis (CFA)

The ISC-FB measure is designed to reflect a second-order factor structure, with the three internal social capital resources attributes (viz., structure, cognitive, relational)

serving as latent indicators of the second-order ISC-FB construct. This second-order conceptualization is consistent with the majority of existing multidimensional constructs (Law, Wong, & Mobley, 1998), and it provides researchers with some flexibility in terms of breadth, bandwidth, and fidelity (see Cronbach, 1990). To begin, we estimated a series of CFAs to further refine the ISC-FB's items and to quantitatively assess its factorial validity.

Keeping parsimony in mind, our goal was to obtain four items per dimension (Hinkin, 1998). We inspected modification indices and item t-values to identify poorly performing items. Once identified, an item was deleted and the CFA analysis repeated. A CFA of the 12 items (surviving the respecification procedure) yielded a strong fit to the anticipated second-order factor model. We emphasized three goodness-of-fit measures in addition to standardized factor loadings and t-values. The comparative fit index (CFI) = .985 and the root mean square error of approximation (RMSEA) = .063, with a confidence interval (CI) 90% = .049 to .078, which exceeded acceptable thresholds. Further supporting the hypothesized model, each of the ISC-FB items loaded strongly on its intended dimension (average standardized factor loading = .86), all of which were statistically significant with t-values ranging from 12.94 to 27.31 ($p < .001$). The three social capital dimensions also loaded significantly (t-values ranging from 16.15 to 17.70; $p < .001$) on the second-order (i.e., general) factor, with an average standardized loading of .95.

As Law and his colleagues (1998) have explained, because our second-order, multi-dimensional model is defined in terms of the commonality among the dimensions, there needs to be evidence showing that the attributes are sufficiently correlated to justify the summing of the component dimensions into an overall measure. In the present instance, the first-order factors correlated with each other (average r = .84) and with the second-order factor (average r = .94). The final 12-item ISC-FB measure obtained from this process is shown in Table 1.

We then examined the fit of four alternative models to determine if the anticipated second-order factor structure was the best-fitting model to the observed data. The first alternative model was a one-factor model in which all items were loaded on a single factor. The remaining alternative models were two-factor models. Model 2 included a cognitive factor and a common factor for the structural and relational dimensions of internal social capital. Model 3 included a relational factor and a common factor for structural and cognitive dimensions. Model 4 included a structural factor and a common factor for relational and cognitive dimensions. According to the chi-square difference tests shown in Table 2, each of the alternative models was a worse fit ($p < .01$) to the observed data. Also reported in Table 2 are the computed Akaike information criterion (AIC) values for each estimated model (Browne & Cudeck, 1989). When comparing the AIC values for two competing models, the model with the lowest AIC value reflects the best-fitting model. In line with the chi-square difference tests, the AIC value (174.33) for the second-order factor structure is lowest, thereby suggesting a better fit to the observed data.

Item Analyses

Items showing little variability are not of much value in developing new measures. Thus, an inspection of the minimum and maximum values indicated that respondents used the full range of possible scale responses (from 1 to 5) for each of the 12 items. Examination of the item means (average item mean = 4.2) and standard deviations (SD) (average SD = .84) revealed that restriction of range was not a concern. We also computed each item's corrected item-total correlation (CITr; the correlation between an item and the sum of the remaining items on the same subscale) and compared its CITr value with

Table 1

Standardized Regression Weights for ISC-FB Based on a Second-Order Factor Structure

Factor/item[†]	Estimate
Structural dimension	.951[‡]
Family members who work in this firm engage in honest communication with one another.	.916
Family members who work in this firm have no hidden agendas.	.905
Family members who work in this firm willingly share information with one another.	.869
Family members who work in this firm take advantage of their family relationships to share information.	.606
Relational dimension	.986[‡]
Family members who work in this firm have confidence in one another.	.945
Family members who work in this firm show a great deal of integrity with each other.	.938
Overall, family members who work in this firm trust each other.	.918
Family members who work in this firm are usually considerate of each other's feelings.	.827
Cognitive dimension	.931[‡]
Family members who work in this firm are committed to the goals of this firm.	.937
There is a common purpose shared among family members who work in this firm.	.906
Family members who work in this firm view themselves as partners in charting the firm's direction.	.866
Family members who work in this firm share the same vision for the future of this firm.	.804

[†] Items for each dimension are an adapted version of Leana and Pil's (2006) measure.
[‡] Estimates are for first-order factor loadings on the second-order factor.
Note: n = 341. All loadings were significant at $p < .001$.
ISC-FB, internal social capital among family business.

Table 2

Comparison of Alternative Confirmatory Factor Analysis Models

Model	χ^2	df	$\Delta\chi^2$ (Δdf)	AIC index
Study 2 (n = 341)				
Hypothesized (second-order model)	120.33	51	—	174.33
One factor	186.68	54	66.35 (3)**	234.68
Two-factor Model 2 (structural + relational combined)	173.85	52	53.52 (1)**	225.85
Two-factor Model 3 (structural + cognitive combined)	185.90	52	65.57 (1)**	237.87
Two-factor Model 4 (relational + cognitive combined)	173.70	52	53.37 (1)**	225.71

** $p < .01$
AIC, Akaike information criterion; df, degree of freedom.

the correlation obtained between the item and scores computed for the other dimensions. This latter analysis yields relatively homogenous and unique item sets per dimension (see, e.g., Tett, Fox, & Wang, 2005). Results indicate that all three subscales are relatively homogenous and, thus, include a unique item set per dimension. Finally, the 12-item ISC-FB possessed high reliability ($\alpha = .97$). Cronbach's alpha for the 4-item structural

dimension was .88, for the 4-item relational dimension alpha was .95, and for the 4-item cognitive dimension alpha was .93.

Convergent and Discriminant Validity Assessment

The next step in the construct validation process is examining the extent to which the ISC-FB measure correlates with other, conceptually similar constructs (Hinkin, 1998). And yet, the empirical associations should not be so high as to suggest empirical redundancy. As shown in Table 3, convergent validity correlations were in line with expectations; ISC-FB most strongly correlated with family to work support (r = .72), less so with knowledge sharing (r = .69) and cohesion (r = .69), and weakest, yet still significantly, with positive spillover (r = .62). To supplement this analysis, we further assessed convergent validity by using the standardized factor loadings (obtained from the measurement model described afterward) to compute a variance-extracted estimate (Fornell & Larcker, 1981). The ISC-FB variance-extracted estimate was above .50 (.86), demonstrating that the proportion of variance explained by the measure was greater than the variance due to measurement error.

We then used chi-square difference tests to compare the fit of a correlated five-factor measurement model (ISC-FB + family to work support, knowledge sharing, cohesion, and positive spillover) against the fit of alternative models that constrained a correlation between two constructs to 1.0 (Anderson & Gerbing, 1988). Results indicated that the freely estimated model is a significantly better fit to the observed data. Additional support for the nonredundancy between constructs is offered by the CI around the latent correlations (φ)—in no instance did any of the 95% CI contain the value of 1.0 (Anderson & Gerbing). In sum, measurement model results supported the convergent (i.e., each indicator's estimated pattern coefficient on its posited underlying construct factor is significant) and discriminant (i.e., latent constructs are not perfectly correlated) validity of our measures (Anderson & Gerbing). Table 3 provides means, SD, and correlations of the control and study variables.

Predictive and Incremental Validity Analyses

We predicted relationships between internal social capital resources and their capabilities (viz., knowledge sharing and cohesion), noneconomic outcomes (viz., work satisfaction and family satisfaction), and firm performance. As shown in Table 4, the ISC-FB accounted for unique variance—over and above firm controls—in each of the outcomes examined. The measure explained 44% of the variance in knowledge sharing, 47% of the variance in cohesion, 33% of the variance in work satisfaction, 42% of the variance in family satisfaction, and 4% of the variance in firm performance.

Whereas these findings support the predictive validity of the newly developed measure, they do not demonstrate incremental validity. If incremental validity can be established, this would provide additional evidence that the ISC-FB is independent from existing and theoretically related constructs. We therefore anticipated that the ISC-FB would be positively related to these same outcomes when controlling for family support and positive spillover. Table 5 presents the hierarchical regression results for which the sequential steps in the analysis were: (1) the firm covariates, (2) the two theoretically related variables of family support and positive spillover, and (3) the ISC-FB.

The ISC-FB accounted for incremental variance in four of the five criteria over and above that explained by the firm covariates (block 1) and the two theoretically related

Table 3

Descriptive Statistics and Correlations (n = 341)

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
Firm age	17.79	16.2												
Ownership status	1.62	.94	.29**											
Firm size	2.44	.81	.14*	.12*										
Work experience	15.05	11.5	-.16*	-.16*	-.07									
Family to work support	3.93	.75	-.10	-.15*	.09	.01								
Positive spillover	3.88	.75	-.10	-.14*	.07	.01	.81**							
Internal social capital (ISC-FB)	4.25	.72	-.06	-.10	.05	.08	.72**	.62**						
Knowledge sharing	4.18	.66	-.04	-.05	.04	.04	.58**	.57**	.69**					
Cohesion	4.26	.75	-.04	-.04	.04	.08	.57**	.53**	.69**	.60**				
Work satisfaction	4.25	.76	-.01	-.19**	.07	.11*	.58**	.59**	.60**	.53**	.51**			
Family satisfaction	4.10	.82	.02	-.06	.05	.01	.71**	.69**	.66**	.50**	.54**	.67**		
Firm performance	3.34	.82	-.05	-.13*	.19*	-.02	.30**	.25**	.24**	.23**	.18**	.37**	.27**	

*p < .05, **p < .01
SD, standard deviation; ISC-FB, internal social capital among family business.

Table 4

Relationships Between Internal Social Capital in Family Firms and Study Outcomes

	Knowledge sharing (β)	Cohesion (β)	Work satisfaction (β)	Family satisfaction (β)	Firm performance (β)
Firm age	−.01	−.01	.07	.05	−.03
Ownership status	.02	.03	−.16**	−.02	−.12*
Firm size (number of employees)	.02	−.00	.05	.02	.20**
Experience	−.04	.03	.00	−.04	−.02
R^2	.02	.00	.05**	.02	.06*
ISC-FB	.68**	.69**	.58**	.65**	.21**
ΔR^2	.44**	.47**	.33**	.42**	.04**
R^2	.46	.47	.38	.44	.10
Adjusted R^2	.45	.46	.37	.43	.09
F-value	51.3	53.3	36.9	45.9	6.9

* $P < .05$, ** $P < .01$. *Note:* n = 341. Standardized beta weights are shown. Final model results reported.
ISC-FB, internal social capital among family business.

variables (block 2). With respect to this scale, we found that it accounted for an additional 12.9% of the variance in knowledge sharing ($\beta = .52$; $p < .01$) above the 37% accounted for by blocks 1–2; an additional 15% of the variance in cohesion ($\beta = .56$; $p < .01$) above the 34.4% accounted for by blocks 1–2; an additional 5.7% of the variance in work satisfaction ($\beta = .35$; $p < .01$) above the 40.1% accounted for by blocks 1–2; and an additional 3.4% of the variance in family satisfaction ($\beta = .27$; $p < .001$) above the 55.7% accounted for by blocks 1–2. All of these relationships were in the anticipated direction, such that internal social capital scores were associated with higher levels of capabilities (knowledge sharing and cohesion), noneconomic outcomes (work and family satisfaction), but not firm performance.

Supplementary Analyses

It was recently recommended that one should also determine the importance of the new measure, relative to the existing measures in the regression equations (LeBreton, Hargis, Griepentrog, Oswald, & Ployhart, 2007). We applied relative importance analysis (Johnson & LeBreton, 2004) to evaluate each predictor's importance. In comparison with traditional techniques (e.g., comparing ordinary least squares regression weights), which can provide misleading information when predictors are correlated (as in the present instance), relative importance analysis delivers meaningful and interpretable estimates of predictor importance even under high collinearity conditions (Johnson & LeBreton). Other unique benefits of dominance analysis are that: (1) it can detect patterns of complete dominance (e.g., a single dimension explains the majority of variance) versus conditional dominance (e.g., two or more dimensions share in the explanation of variance) and (2) the estimates can be compared through ratios (i.e., a predictor with a relative weight of .20 is twice as important as another predictor with a weight of .10). Moreover,

Table 5

Hierarchical Regression Analyses of Study Outcomes on Internal Social Capital and Theoretically Related Constructs

	Knowledge sharing			Cohesion			Work satisfaction			Family satisfaction			Firm performance		
	ΔR^2	β	RW	ΔR^2	β	RW	ΔR^2	β	RW	ΔR^2	β	RW	ΔR^2	β	RW
Block 1	.02			.01			.05**			.02			.06**		
Firm age		.01			.00			.09*			.09*			-.02	
Ownership status		.04			.05			-.13**			.03			-.10	
Firm size		-.01			-.02			.01			-.03			-.18**	
Experience		-.01			.05			.04			.03			.01	
Block 2	.35**			.33**			.35**			.54**			.06**		
Family support		.03	.236		.05	.232		.08	.276		.30**	.346		.21*	.487
Spillover		.23**	.258		.17*	.217		.31**	.340		.30**	.340		.01	.264
Block 3	.13**			.15**			.06**			.03**			.00		
ISC-FB		.52**	.506		.56**	.551		.35**	.384		.27**	.313		.06	.249
R^2		.50			.49			.46			.59			.13	
Adjusted R^2		.49			.48			.45			.58			.11	
F-value		42.16			41.36			35.76			61.15			6.15	

Note: n = 341. Standardized beta weights are shown. Final model results reported.
ISC-FB, internal social capital among family business; RW, rescaled importance weights.

this analysis approach allows one to be more confident that a new measure contributes meaningful variance to the overall R^2, even when the measure is only responsible for a small increment in criterion-related validity (LeBreton et al.).

In Table 5, we provide information on each predictor's relative importance, defined as "the contribution each predictor makes to the R^2, considering both its unique contribution and its contribution in the presence of the other predictors" (LeBreton et al., 2007, p. 477). We report the rescaled importance weights (designated as *RW* in Table 5). A general importance weight is computed as the average of each predictor's squared semipartial correlation across all possible subset regression models. We then rescaled this weight by dividing it by the total variance explained in the outcome, thereby providing a proportional index of the average usefulness of each predictor (Johnson & LeBreton, 2004; LeBreton et al.).

Relative importance results for knowledge sharing provide strong support for the new ISC-FB measure. More specifically, internal social capital emerged as the most important predictor of knowledge sharing. It dominated the other conceptually related predictors across all possible subset regressions and accounted for 50.6% of the predicted variance in the knowledge sharing outcome. Results for the cohesion outcome demonstrated that internal social capital likewise emerged as the most important predictor by completely dominating the other predictors and accounting for more than half (*RW* = 55.1%) of the predicted variance in the cohesion outcome. Regarding the noneconomic outcomes, results indicated that across all possible combinations of predictors, ISC-FB (*RW* = 38.4%) and spillover (*RW* = 34.0%) slightly outperformed the family support predictor (*RW* = 27.6). A similar result was obtained for the family satisfaction outcome; family support (*RW* = 34.6%), spillover (*RW* = 34.0%), and the ISC-FB (*RW* = 31.3%) were relatively equivalent predictors of family satisfaction. This finding reveals that despite ISC-FB's small incremental validity over the other predictors (R^2 = .03), when simultaneously compared with the existing, conceptually related predictors, family firm internal social capital emerged as a relatively important explanatory variable of family satisfaction. Finally, results indicate that all three predictors explain 9% of the variance in firm performance—with the ISC-FB accounting for roughly 24.9% of that 9%, whereas family support emerged as the most important predictor (*RW* = 48.7%).

Cross-Validation of the ISC-FB's Factor Structure

If the new measure is indeed a reliable and valid assessment of the concept, the factor structure should adhere to theoretical predictions, and demonstrate measurement equivalence across samples. Thus, we collected a second, independent sample of 278 family business owners from the same source as our initial study. Consistent with our conceptualization and previous findings, we anticipated that a second-order factor structure (a higher order factor, indicated by three first-order factors) would provide the best representation of the observed data.

Measurement Equivalence

Essentially, measurement equivalence highlights the question of factorial validity (Cole, Bedeian, & Feild, 2006). In the present instance, we conduct measurement-level tests of configural and metric equivalence (Vandenberg, 2002). Configural equivalence evaluates whether the conceptual frame of reference used by respondents are comparable and is operationalized by testing for similarity in the pattern of factor loadings across two

independent samples. Metric invariance assesses whether factor loadings for like items are equal across our two samples. Thus, tests for equivalence were conducted in two sequential steps. Step 1 (configural equivalence) consists of establishing an unrestricted baseline model that allows the measurement parameters to freely vary by sample. In step 2 (metric equivalence), the model tested as a part of step 1 is constrained by setting the factor loadings to be equal across samples. A loss in model fit, as indicated by a decrease in the CFI of greater than .01 for the constrained model, would support one's rejection of the null hypothesis of metric equivalence (Cole et al.; see Cheung & Rensvold, 2002, for a detailed discussion of the ΔCFI metric).

The proposed second-order model was first fit onto the two independent samples. The CFI = .982 and RMSEA = .046, with a CI 90% = .038 to .053, exceeded acceptable thresholds. We then examined the proposed measure's metric equivalence; because of the single higher order ISC-FB factor, the equality constraint was imposed on the second-order path coefficients as well. Inspecting the CFI compared with the model in step 1 indicated the ΔCFI of −.001 is less than the recommended critical value (ΔCFI = −.01; Cheung & Rensvold, 2002). Taken together, these results support the conclusion that the factor structure and factor loadings associated with the ISC-FB measure were invariant across the two independent samples.

Fixed Parameter Estimates

Although rarely implemented, the fixed parameter cross-validation procedure was initially recommended by Cudeck and Browne (1983). Based on this approach, we fixed the estimates (viz., factor loadings and residual variances) from the second-order factor structure obtained using the initial study data to the covariance matrix of the follow-up data, and then, we reestimated the model (rather than testing if the parameter estimates are invariant, we are testing if the estimates are exactly the same across samples). Despite the Cudeck and Browne procedure, establishing a highly restrictive form of equivalence, the CFI = .924 and the RMSEA = .084 (CI 90% = .078 to .091) indicated a relatively good fit. All in all, results provide strong evidence for the replicability of the second-order factor structure.

Discussion

The purpose of our research was to develop, using a theoretical framework grounded in social capital theory, a measure of internal social capital for family businesses. We first identified a set of candidate items culled from social capital and family business research. Then, we conducted a content validity assessment as recommended by Schriesheim et al. (1993) and Hinkin (1998). Next, we collected data from two samples drawn from the population of family businesses so that we could: (1) empirically refine our proposed measure, (2) examine its construct validity, and (3) cross-validate its proposed factor structure. It is thus hoped that the new measure proves useful to those interested in examining family firms' internal social capital and facilitates the much needed empirical research into this important area.

There are several implications with respect to our study. First, we contend that internal social capital represents a concept that is internally developed within family firms, and is largely dependent upon the family members themselves, to include the quality and quantity of the relationships that are present within the family, and the degree to which these

relationships can be leveraged to create unique and valuable firm capabilities. Thus, collective/internal social capital within family firms is not simply a reflection of the business's organizational characteristics, processes, markets, products and services, or customers. Rather, it represents unique and inimitable resources derived from the socially defined unit known as the family, which influences and ultimately defines the family business itself.

Second, we contend that the development of the ISC-FB provides a useful tool for capturing these business resources, and how they affect organizational capabilities and outcomes both from an economic and noneconomic viewpoint. Research can examine this measure as it related to such activities as succession planning, decision-making styles, or family business conflict, or perhaps develop a set of variables that capture the antecedents of this concept. Researchers using the Pearson et al. (2008) theoretical model can further explore the mediating and moderating effects of organizational and environmental variables that affect or are affected by social capital and, thus, advance our study of this important family business characteristic.

The fact that firm performance was not as strongly related to the ISC-FB measure as more proximal firm-level capabilities could be related to the fact that our measure focuses only on the internal social capital within the firm. Existing theory regarding social capital also highlights the role of external (i.e., bridging) social capital, which could play a significant (and supplementary) role with regard to firm performance. To that end, future research should begin to examine the relative strength and importance of these two facets of social capital and provide a better understanding of the overall role of this important firm's characteristics. Additionally, researchers can explore the dimensions of social capital to further identify the means by which these dimensions individually affect each other and other important firm outcomes. Finally, an empirical comparison of ISC-FB within family versus nonfamily firms is also warranted, with the goal of exploring the role that internal social capital plays within these different organizational forms.

Our research is not without limitations. Our sample of family firms was developed without an assessment of the degree to which the family is, indeed, tightly integrated into the firm, nor the characteristics and contributions of nonfamily managers/workers to the family firm's collective/internal social capital. Additionally, the role of family members outside of the family firm itself is not quantitatively assessed regarding internal social capital. Future research should examine the degree of family embeddedness and examine the importance of nonfamily managers in developing and maintaining the social capital within the family firm. While this study focused on the founders/owners within the firm, future research should continue to explore the social capital dynamic with these other key constituencies. Additionally, while we attempted to carefully screen for family businesses, research should develop more comprehensive criteria to ensure that family versus nonfamily businesses can be readily differentiated.

Furthermore, our data did not include objective economic performance measures; instead, we used a 5-item measure comparing performance with competitors (McDougall et al., 1994). Although recent studies have shown the use of subjective measures as appropriate in certain contexts (Richard et al., 2010), we recognize that objective performance data may have been better. Also, our sample was not conducted with lagged data, thus, causality cannot be readily identified. Finally, our research sample was composed of small firms, and thus, our conclusions may not be readily applicable to larger, more established family businesses.

Much like the work linking family business phenomena to RBV and to agency theory, we believe that the development of the ISC-FB further enhances our understanding of family businesses because our efforts were grounded in theory. By grounding our work in

social capital theory, we hope that future scholars will be able to continue to expand and improve upon our ability to explain why family firms exist and what determines their scale and scope.

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