Identification and Member Commitment to Agricultural Cooperatives

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Cooperatives are an enduring organizational form in the agri-food sector, though numbers of traditional marketing and supply cooperatives have declined in many markets due to consolidation. As well, the population of farmers that represent the pool of actual and potential members is declining throughout the developed economies where agricultural cooperatives have been important. Many authors have suggested that the number of actual members of agricultural cooperatives is declining relative to the pool as a result of diminished commitment of farmer-members to agricultural cooperatives and that this trend will be exacerbated by future pressures on economic performance.

Commitment represents a preference for doing business and, hence, maintaining membership, in a cooperative when there are alternatives available (Fulton), usually investor-owned firms (IOFs). Commitment is an outcome variable and is usually visible only in overt, dichotomous farmer behavior: commitment (continued patronage) and defection. Recent literature has exploited the dichotomous choice in modeling commitment between a cooperative and an IOF in a duopoly or duopsony (Fulton, 1999; Fulton and Giannakas, 2001; Karantininis and Zago, 2001). The member commits to the cooperative if the cooperative returns a more favorable price, higher transaction profits, or some nonprice advantage that cannot be copied by the IOF.

In this paper we seek to measure commitment as antecedent behavior to the continuation/defection decision. We employ a measurement model of commitment by existing cooperative members to their cooperative in which they express attitudes that drive the continuation/defection decision. We further extend the behavioral model to include exogenous variables to the attitudes toward commitment. Following Foreman and Whetten (2002), we model the cooperative to be an organization with a hybrid identity – a normative or social identity and a utilitarian or economic identity. Each member has a set of expectations about how the cooperative should perform as a normative organization and as a utilitarian organization. Against these expectations, the member assesses the actual (perceived) performance of the cooperative. Organizational identity theory posits that commitment is driven by the comparison, or gaps, between perceived and expected normative and utilitarian identity.

The article is structured as follows. The next section presents the theoretical basis for identity analysis and the hybrid identity organization. We then lay out a general form for a structural equation model with an exogenous measurement model of hybrid identity that is linked to an endogenous measurement model of organizational commitment. The variables and data are then presented for a three-region test of the structural equation model. Both measurement models are tested separately for robustness across three data sets and a complete structural model is estimated. Empirical results are discussed and conclusions drawn.

Organizational Identity, Hybrid Identity, and Commitment

Organizational Identity

Beginning with Albert and Whetten's (1985) seminal paper, organizational identity has grown to become an established means of analyzing many aspects of organizations. Identity is essentially the set of beliefs or meanings that answer the fundamental question in the organization: "who are we?" (Albert and Whetten, 1985; Dutton and Dukerich, 1991). Over the last decade, a steadily growing volume of research has demonstrated the utility of the identity construct, employing it in a variety of ways to explore and explain a range of organizational phenomena. For example, organizational identity has been used to show how organizations interpret issues, and identify threats (Dutton and Dukerich, 1991; Elsbach and Kramer, 1996), perceive and resolve conflict (Golden-Biddle & Rao, 1997), and frame strategies (Fiol & Huff, 1992; Ashforth and Mael, 1996).

Furthermore, organizational identity has been combined with social identity theory to shed light on the process whereby individuals identify with organizations (Ashforth and Mael, 1989; Pratt, 1998). Social identity theorists (Tajfel, 1982; Turner, 1982) begin with the premise that people classify themselves and others according to their relationship with various social or demographic groups; e.g., their gender, race, ethnicity, friends, religion, occupation, etc. This social classification scheme provides individuals with a means of defining themselves through a sense of oneness, or identification, with a particular group. As Ashforth and Mael (1989) and others have argued, organizational identification is essentially a subtype of the broader concept of social identification. One such definition (Dutton, *et al*, 1994:239) states that it is “the degree to which a member defines himself or herself by the same attributes that he or she believes define the organization.”

A number of researchers have explored the connections between the *identity of* an organization and members’ *identification with* their organization. i.e., identification stems from a member’s assessments of the fit between their categorizations of their organization and their self-categorizations. Several researchers have, in fact, proposed that members make various kinds of “identity comparisons,” and that these comparisons affect their attitudes and behaviors towards their organization , including cooperation and citizenship (Dutton, Dukerich, and Harquail, 1994; Kramer, 1993), alumni loyalty (Mael & Ashforth, 1992), and organizational commitment (Whetten, Lewis, and Mischel, 1992).

Researchers have approached the operationalization of the identity comparison process in at least two ways, proposing that members either 1) evaluate the organization's identity based on their own self-identity (e.g., Ashforth & Mael, 1989, Dutton *et al*, 1994), or 2) compare their perceptions of the organization's identity with what they would prefer the identity to be (e.g., Reger *et al*, 1994, Whetten *et al*, 1992). The first approach captures the categorization mechanism described above, as members compare their cognitive categorizations of their organization with their categorizations of their self. In the second approach, the "preferred," "expected," or "ideal" organizational identity acts as an extension of the member's identity.

As shown in Figure 1, we have conceptualized organizational identification as a comparison process between what a member perceives the identity of the particular organization to be and what that member thinks the identity should be, i.e., the level of congruence between members' organizational identity perceptions and their identity expectations. Using the terminology of Reger, Gustafson, DeMarie, and Mullane (1994), we propose that an individual member compares their perceptions of an organization's current identity (beliefs about the existing character of the organization) with their expectations regarding its ideal identity (beliefs about what is desirable, informed by the member's sense of self); and the resulting *identity gap* (the cognitive distance between the current and ideal organizational identity claims) significantly affects a member's level of involvement with the organization.

Insert figure 1 about here

Hybrid Identity

It is commonplace for scholars to speak of people (Deaux, 1991; Feldman, 1979; Gecas, 1982; Thoits, 1983) and organizations (Albert & Whetten, 1985; Ashforth & Mael, 1996; Golden-Biddle & Rao, 1997) having multiple identities. Ashforth and Mael (1989) propose that the presence of multiple identities often seriously complicates the process of organizational identification. Following Albert and Whetten (1985) we will refer to these organizations as *hybrid identity organizations*, which they define as:

> ... "An organization whose identity is composed of two or more types that would not normally be expected to go together…[I]t is not simply an organization with multiple components, but it considers itself (and others consider it), alternatively, or even simultaneously, to be two different types of organizations" [p 270].

In this study we also chose to follow the lead of Albert and Whetten in considering a particular type of hybrid identity organization, namely those that are constituted according to two seemingly incompatible value systems (Parsons, 1956; Etzioni, 1961): a *normative* value system (emphasizing traditions and symbols, internalization and preservation of an ideology, and altruism), like that of a church or family; and a *utilitarian* value system (characterized by economic rationality, maximization of power or profits, and self-interest), like that exemplified in a typical business.

Rural cooperatives have a strong hybrid identity, deeply rooted in their pluralistic mission and their normative and utilitarian value systems. One definition of a cooperative (Groves, 1985) states: "A cooperative is a group of persons pursuing common economic, social, and educational aims by means of a business." Embedded within this definition is the genetic code of a hybrid organizational identity: cooperatives are constituted to operate in accordance with multiple, seemingly incompatible, organizing logics. In one sense they are using normative means to accomplishing utilitarian objectives (what's different is the way they do business). In another sense they are using utilitarian means to accomplish normative goals (what's different is why they do business). Either way, this organizational form contains indispensable, inviolate and incommensurable imperatives.

Since co-ops are organized to accomplish business objectives (e.g., market products, buy supplies, obtain credit), they have an avowed utilitarian mission. Clearly, members expect some economic benefit, or pay off, from their participation. However, one of the distinctive features of co-ops is their unique way of doing business. In particular, this organizational form was founded on principles of cooperation, social solidarity and egalitarianism, reinforced by equal voting rights and equal rates of return on investment (Barton, 1989). Additionally, co-ops have historically sought to reinforce the traditions and values of agrarianism through educational and social interventions. Indeed, for many members the social and political goals of a cooperative have been and still are preeminent. To many members the notion that co-ops are "more than a business" means they are expected to be "unlike-a-business." This "unlike-a-business" aspect of co-ops is often characterized using family, community, or church metaphors of organizing.

This characterization is compatible with Fulton's (1999) model of the cooperative having characteristics that the investor–owned firm (IO), a strictly utilitarian identity, does not. He lists several social activities (lobbying, community involvement) and attributes (ideology, member control) which would be subsumed in the normative identity. Fulton and Adamowicz (1993) show that the normative attributes are less highly valued by younger members. They would have higher identification with the utilitarian identity.

The dual identity model has been characterized conceptually in the francophone literature, where Côté (1992) proposes a model of strategic management for cooperatives that requires the balance between a techno-economic *pôle* and a socio-political *pôle*.

Achieving the balance requires a strategic approach to an internal market that looks much like the external market processes modeled formally by Karantininis and Zago (2001).

Commitment

The model in figure 1 shows commitment to be the outcome variable from the identity comparison between perception and expectations. Commitment has been defined and operationalized in a variety of ways in the organizational studies literature (e.g., Becker, 1960,1992; Meyer & Allen, 1984; Mottaz, 1989; Mowday, Porter, & Steers, 1982; O'Reilly & Chatman, 1986; Wiener, 1982). Furthermore, scholars have offered an array of views regarding the construct's bases, foci, antecedents, and consequences (see Becker, 1992; Mathieu & Zajac, 1990; O'Reilly & Chatman, 1986; Randall, 1990; Reichers, 1985). In spite of this conceptual complexity, definitions of organizational commitment generally fall into one of two main categories: <u>attitudinal</u> or <u>behavioral</u>.

The attitudinal view, championed by Porter and colleagues (Mowday *et al*, 1982; Porter, Steers, Mowday, & Boulian, 1974), focuses on the emotional attachment members hold for their organization. From this perspective, organizational commitment is essentially a psychological state, and it is typically measured with a self-report scale that taps into the emotional or affective content of the member's relationship with their organization (e.g., Mowday *et al*, 1982; Meyer & Allen, 1984; O'Reilly & Chatman, 1986).

Among organization scholars, there is a growing consensus that commitment is a multi-dimensional construct and should be assessed as such: with at least an emotional, or affective, component and an instrumental, or calculative, component (Becker, 1992; Mathieu & Zajac, 1990; Meyer & Allen, 1997; Randall, 1990). We specifically choose to use the constructs and measurement scales of <u>affective and continuance commitment</u> developed by Meyer and Allen

(Allen & Meyer, 1990; McGee & Ford, 1987; Meyer & Allen, 1984), primarily because they have been widely adopted and well validated in the organization studies literature. Affective commitment reflects the degree to which a member "wants" to remain in the organization, while continuance commitment captures the degree to which the member "needs" to stay. Affective commitment focuses on a member's positive feelings about their involvement in the cooperative. Continuance (calculative) commitment focuses on a member's likelihood of continuing as a member of an organization, given current opportunities and options to leave.

The conceptual model that is tested below has two dimensions for the exogenous (identity) model. The first is the explicit distinction between perceived and expected identity. The second is the utilitarian – normative dimension that captures the hybrid nature of the cooperative organization and differentiates it from the IOF. The endogenous (commitment) model has two outcomes: affective and continuance commitment. Each member's behavior then is captured by six latent variables (see table 1 below). The six latent variables are defined by theory. For each latent variable there are observable or manifest variables that are measured by the survey instrument.

The Structural Equation Model

Structural equation modeling (SEM) is widely used in the social sciences to represent the relationships among endogenous and exogenous variables, some of which are observable and some of which are nonobservable, or latent, constructs. The observable variables are most often modeled as the indicators or manifest variables associated with the latent variables. The observable variables are regressed on the latent variables rather than on other observable variables. The endogenous latent variables are then regressed on exogenous latent variables. The coefficients are typically presented in a path diagram (see figure 5) where the regressions are depicted as directed arcs (straight lines with a single arrow denoting causal direction). The path diagram also contains nondirected arcs, which are either covariances depicted as curved lines with double arrows or error terms associated with observable variables and endogenous latent variables. Path diagrams are often confusing and the theoretical relationships are often obfuscated by the graphical presentation.

The structural equation model can be written in compact form as a reticulated action model (RAM) after McArdle and McDonald (1984):

(1a) $\mathbf{v} = \mathbf{A}\,\mathbf{v} + \mathbf{u}$

(1b) $\mathbf{C}$

where $\mathbf{v}$ is a vector of random variables which may be observable or latent, $\mathbf{u}$ is a vector of errors of measurement and disturbance terms, and $\mathbf{A}$ is matrix of coefficients that represent directed arcs between the random variables. The matrix **C** contains all of the nondirected arcs (covariances and residual variances) associated with the variables. The RAM has a nonzero element of A for each directed (causal) arc and a nonzero element of C for each nondirected arc, making the model isomorphic to a particular path model derived from theory.

This model can be expanded to make the variables, errors, and coefficients more explicit by forming patterned matrices following Keesling (1972), Wiley (1973) and Jöreskog (1973, 1978) in what is commonly called the LISREL format.

$$\mathbf{v} = \begin{bmatrix} \mathbf{y} \\ \mathbf{x} \\ \eta \\ \xi \end{bmatrix} \quad \mathbf{A} = \begin{bmatrix} \mathbf{0} & \mathbf{0} & \Lambda_y & \mathbf{0} \\ \mathbf{0} & \mathbf{0} & \mathbf{0} & \Lambda_x \\ \mathbf{0} & \mathbf{0} & \mathbf{B} & \Gamma \\ \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{0} \end{bmatrix} \quad \mathbf{u} = \begin{bmatrix} \varepsilon \\ \delta \\ \zeta \\ \xi \end{bmatrix}$$

The **v** vector consists of *p* endogenous indicator variables **y**, *q* exogenous indicator variables **x**, *m* latent endogenous variables $\boldsymbol{\eta}$, and *n* latent exogenous variables $\boldsymbol{\xi}$. In the models below, *p* = 8, *q* = 16, *m* = 2 <u>or</u> *m* = 4, and *n* = 4. The **A** matrix has four submatrices: Λ_y which relates the endogenous latent variables to their observable indicators, Λ_x which relates the exogenous latent variables to their observable indicators, **B** which is the structural model that relates the endogenous latent variables to each other, and Γ which relates the endogenous and exogenous latent variables. The vector **u** contains four types of terms: ε, δ, ζ, and ξ which are respectively the measurement errors on the endogenous measurement model equations, the errors on the exogenous measurement model equations, the disturbance terms on the structural equations, and the latent exogenous variables. Associated with equation (1) is the patterned covariance matrix

$$\text{(2)} \qquad \mathbf{C} = \begin{bmatrix} \Theta_\varepsilon & & & \mathbf{0} \\ & \Theta_\delta & & \\ & & \Psi & \\ \mathbf{0} & & & \Phi \end{bmatrix}$$

where $\Theta_\varepsilon = E\{\varepsilon\varepsilon'\}$, $\Theta_\delta = E\{\delta\delta'\}$, $\Psi = E\{\zeta\zeta'\}$, and $\Phi = E\{\xi\xi'\}$. It is assumed that $E(\boldsymbol{\eta}) = 0$, $E(\boldsymbol{\xi}) = 0$, $E(\varepsilon) = 0$, $E(\delta) = 0$, and $E(\zeta) = 0$. It is assumed that the error terms ε and δ are uncorrelated with each other and with the latent variables η and ξ. Finally, the disturbance terms ζ are uncorrelated with the exogenous latent variables ξ.

The covariance structure of the model is related to C by the expression

$$\text{(3)} \qquad \Sigma = \mathbf{J}(\mathbf{1}-\mathbf{A})^{-1}\mathbf{C}(\mathbf{1}-\mathbf{A})^{-1\prime}\mathbf{J}'$$

where **J** is a selection matrix for the *p* + *q* observable variables. The covariance matrix $\mathbf{\Sigma}$ represents the data structure from which the model parameters -- Λ_y , Λ_x , **β**, **Γ**, **Φ**, and **Ψ** – are estimated.

For purposes of exposition and for fitting alternative models to the data, it is useful to decompose equation (1) into three submodels representing the endogenous measurement model, the exogenous measurement model, and the structural or path model, respectively:

(4) $\mathbf{y} = \Lambda_y \eta + \varepsilon$

(5) $\mathbf{x} = \Lambda_x \xi + \delta$

(6) $\eta = B\eta + \Gamma\xi + \zeta$

The measurement models (4) and (5) and the related error covariance matrices, Θ_ε and Θ_δ, can be treated as separate confirmatory factor analysis models given the block diagonal structure of the **C** matrix. The coefficients Λ_y and Λ_x are the factor loadings of the observable variables on the latent variables.

The endogenous latent variables **η** are related causally to the exogenous variables **ξ** in a manner analogous to the standard linear econometric model

(7) $B\mathbf{Y} + \Gamma\mathbf{X} = \mathbf{u}$

where there are no latent variables, only observable variables. The structural, or path, model follows the logic of (7) by modeling causality from exogenous (latent) variables to endogenous (latent) variables. Recent work in graph theory (Spirtes *et al*,1998; Pearl, 2000) has clarified the causal nature of the structural relationships inherent in equation (6) by exploiting directed acyclic graphs (DAGs). The DAGs make explicit the causal relations expressed in **Γ** and **β** as distinct from (a) nondirected relationships between variables (**Φ, Ψ,** and **Θ**) and (b) omitted causal paths that are contraindicated by theory. The structural model (6) is often presented as a path model in graphical form where the directed (causal) arcs and nondirected arcs are shown. We will use this format as well as matrix notation when the empirical models are discussed below.

`Data and Empirical Specification

We test our model of identity effects on commitment with data obtained by surveys of members of rural agricultural cooperatives in three different countries. Specifically, we initially sampled coop members in the Midwest U.S., after developing the specific items to assess the normative and utilitarian identity of cooperatives via focus groups and interviews with managers and directors of cooperatives in the region. We then replicated the survey among cooperative members in Alberta, Canada and Bretagne, France. Although there were some differences in the characteristics of the three samples, great care was taken to ensure that the surveys were nearly identical and the sample groups were as similar as possible. Each of the samples is discussed below in greater detail.

Midwest U.S.

A survey was conducted of 1900 members of rural cooperatives in a midwestern state. The sample was drawn from the list of customers served by a rural electrification cooperative which provides power for over 90% of rural residents in a five-county region. This sampling frame was chosen for several theoretical and methodological reasons. Because of the overwhelming percentage of rural residents served by the electric coop, we expected to obtain a fairly representative sample of the members of the various agricultural coops in the region. Furthermore, because much of the meaning and significance of rural cooperatives in America is tied to agriculture, we wanted to obtain a sample of farmers and non-farmers that included a range of support for and involvement in coops. Using membership lists of farm-related coops only would obviously have given us a censored sample, excluding non-farmers and those farmers that do not actively support cooperatives. Using the electric coop's customer base as a sampling frame provided the best opportunity for us to capture a full range of views and experiences across a variety of coops.

Approximately 800 surveys were returned after two mailings, for an overall response rate of 42%. After removing surveys with significant amounts of incomplete information, there were 670 useable surveys, for a 37% effective response rate. Although this is a respectable response rate, especially given the nature of the survey and the sample, it leaves open the possibility of sample bias and non-response bias. Accordingly, we performed several comparison tests to check for these biases. First, using current agricultural census data, we were able to check for demographic differences between those survey respondents who were active farmers (45 % of the sample) and the overall population of farmers in the state. In sum, our farmer-respondents were fairly representative of the population at large, thus reducing the possibility of sample bias.

All of the respondent households were members of the rural electric coop, and 74% of the respondents were members of at least one additional coop. These other co-ops were all agriculturally related, either for marketing grain, supplying seeds and chemicals, or providing financial credit to farmers and rural businesses. Over half (52%) of the respondents were active in farming, and almost 80% had farmed at one point in their lives and were receiving income from farm-related activities. For the purposes of this analysis we deleted all respondents who were solely members of the electrification cooperative (and did not farm) and used only responses without missing data from the twenty four variables which are used in this model. This left a sample of 327 cases for analysis.

Alberta

Similar to the U.S. sample, a survey was conducted among 2000 members of several agricultural cooperatives in Alberta, Canada. These members were randomly drawn from the membership roles of 20 major cooperatives in the province, including the dominant Alberta Wheat Pool. After two mailings, over 820 responses were returned, for a 41% response rate. After deleting surveys in a listwise manner with incomplete information and from self-described non-farmers, 722 cases remained, resulting in an effective response rate of 36%. No response bias was identified in comparing demographic data with Canadian census data.

Bretagne

In contrast to the sample sizes of approximately 2000 in the U.S. and Canada, a smaller sample of 1000 was drawn of farmers in western France. The sample of cooperative members was drawn randomly from membership lists of eight agricultural cooperatives that belong to the Confederation of Agricultural Cooperatives of the West of France (CCAOF). Staff members of the CCAOF chose four cooperatives from the Bretagne region and four from the Pays de la Loire region and mailed 1000 forms to the sample population. Nonrespondents were contacted by telephone four weeks after the mailing. The final response was 336 surveys, for a response rate of 34%. Interestingly, only a few responses were discarded due to incomplete information. We retained 310 complete cases for further analysis.

The CCAOF staff compared the respondent profiles to the General Agricultural Census data for the country and determined that the respondents were better educated than the population of farmers (33% had completed the baccalaureate, compared to 2% of the general population) and younger than the general population (mean age of 41 years for respondents vs.

55 years for census). The differences reflect, in part, the nature of the more industrialized, modern production in the West of France compared to the national demographics.

The questionnaire was translated from the English version into French by a francophone student in France, and this translation was corroborated by two French-speaking American faculty. The resultant French translation was then back-translated into English by an anglophone student in France and was corroborated by an American language (French) instructor. The authors and the CCAOF staff resolved disparities. The translated document was pre-tested by CCAOF staff with ten farmer/cooperators drawn randomly from the membership list from a nonsampled cooperative in the Bretagne region.

Variables

Twenty four of the 146 items from the mail survey are used in this analysis. The twenty four variables are coded on a 7-point Likert scale. There are four measurement variables for each of six latent variables (see table 1).

Insert table 1 about here

Table 2 lists the variables from the **x** vector, the observable variables associated with the exogenous measurement model for identity. The wording of the questions is given in the table. The questions were pretested to (a) assure that the underlying latent variables had multiple indicators and (b) highlight the distinction between expected identity and perceived identity in both a normative and utilitarian domain.

Insert table 2 about here

Table 3 lists the variables from the **y** vector, the observable variables associated with the endogenous measurement model for commitment. The wording of the questions to which the respondents scored 1 (strongly disagree) to 7 (strongly agree) is given in the table. These items are derivatives of Meyer and Allen's (1984; 1997) well-validated affective and continuance commitment scales. We selected four of the eight items in their affective commitment scale, particularly intending to capture effects of the member's identification with and attachment to their local cooperative. The four items selected to measure continuance commitment were intended to assess the twin effects of availability of alternatives and personal disruption on a member's decision to stay with their cooperative.

Insert table 3 about here

Specification of Measurement Models

Following Thompson, we will specify the measurement models first and fit them to the data. We fit the two measurement models to the three regional datasets and then test to see if the three populations can be treated as one. That is, we seek confirmation that the constructs that we are measuring are robust across geographic (and implied cultural) boundaries. Following from tables 1 and 2, we derive a measurement model for the exogenous model of member identification with the cooperative. There are four latent variables representing expectations and perceptions of both normative and utilitarian identity. Each latent variable has four indicator variables.

In expanded form, the exogenous model is:

$$
(8)\quad
\begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \\ x_7 \\ x_8 \\ x_9 \\ x_{10} \\ x_{11} \\ x_{12} \\ x_{13} \\ x_{14} \\ x_{15} \\ x_{16} \end{bmatrix}
=
\begin{bmatrix}
1 & 0 & 0 & 0 \\
\lambda_2^x & 0 & 0 & 0 \\
\lambda_3^x & 0 & 0 & 0 \\
\lambda_4^x & 0 & 0 & 0 \\
0 & 1 & 0 & 0 \\
0 & \lambda_6^x & 0 & 0 \\
0 & \lambda_7^x & 0 & 0 \\
0 & \lambda_8^x & 0 & 0 \\
0 & 0 & 1 & 0 \\
0 & 0 & \lambda_{10}^x & 0 \\
0 & 0 & \lambda_{11}^x & 0 \\
0 & 0 & \lambda_{12}^x & 0 \\
0 & 0 & 0 & 1 \\
0 & 0 & 0 & \lambda_{14}^x \\
0 & 0 & 0 & \lambda_{15}^x \\
0 & 0 & 0 & \lambda_{16}^x
\end{bmatrix}
\begin{bmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \\ \xi_4 \end{bmatrix}
+
\begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \\ \delta_6 \\ \delta_7 \\ \delta_8 \\ \delta_9 \\ \delta_{10} \\ \delta_{11} \\ \delta_{12} \\ \delta_{13} \\ \delta_{14} \\ \delta_{15} \\ \delta_{16} \end{bmatrix}
$$

There are four parameters of the $\Lambda_{\mathbf{x}}$ matrix that are restricted to be equal to 1. This modeling convention permits the sixteen equations to be identified and scales the factor loadings to a common level. There are no correlated error terms and the four latent variables are assumed to be correlated (i.e. the lower left triangle of the $\mathbf{\Phi}$ matrix is full).

In expanded form, the endogenous model is:

$$
(9)\quad
\begin{bmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \\ y_6 \\ y_7 \\ y_8 \end{bmatrix}
=
\begin{bmatrix}
1_1 & 0 \\
\lambda_2 & 0 \\
\lambda_3 & 0 \\
\lambda_4 & 0 \\
0 & 1 \\
0 & \lambda_6 \\
0 & \lambda_7 \\
0 & \lambda_8
\end{bmatrix}
\begin{bmatrix} \eta_1 \\ \eta_2 \end{bmatrix}
+
\begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \\ \varepsilon_6 \\ \varepsilon_7 \\ \varepsilon_8 \end{bmatrix}
$$

There are two λ_i that are restricted to 1. There is one covariance modeled between η_1 and η_2 in the measurement model. This covariance disappears in the full structural equation model, as it is assumed that $E(\eta\eta') = 0$ in the general model of equation (2). There is also one correlation estimated between ε_5 and ε_6 as a result of empirical testing of model fit.

Specification of the Structural Model

Several authors, including McDonald and Ho (2002) and MacCallum *et al* (1993), stress the need to assess alternative path models when fitting structural equation models to the data. We offer two alternative models. The first follows the norms for structural equation modeling in the literature by specifying a directed arc from each exogenous latent variable to each endogenous latent variable. We call this the Full **Γ** Matrix Model. In matrix form this appears as

(10) $$\begin{bmatrix}\eta_1\\ \eta_2\end{bmatrix} = \begin{bmatrix}0 & 0\\ 0 & 0\end{bmatrix}\begin{bmatrix}\eta_1\\ \eta_2\end{bmatrix} + \begin{bmatrix}\gamma_{11} & \gamma_{12} & \gamma_{13} & \gamma_{14}\\ \gamma_{21} & \gamma_{22} & \gamma_{23} & \gamma_{24}\end{bmatrix}\begin{bmatrix}\xi_1\\ \xi_2\\ \xi_3\\ \xi_4\end{bmatrix} + \begin{bmatrix}\delta_1\\ \delta_2\end{bmatrix}$$

This model contains the theoretical structure of figure 1 in implicit form. That is, the comparisons between expected and perceived identity and their relationships to the two latent commitment variables are captured in the eight coefficients of the **Γ** matrix.

This is contrasted to an Induced Variable Model. Following Klem (2000), we identify two latent variables which serve to specifically match the theoretical model in Figure 1. That is, there is a latent variable η_3 which is induced by the normative perceptions and normative expectations of the member. This variable corresponds to the normative identity gap or identity comparison variable in the theory. Similarly, a utilitarian identity comparison variable η_4 is induced by the utilitarian perceptions and expectations variables. The gap, or comparison, variables are modeled as the difference between expectations and perceptions of the normative and utilitarian identities held by the members.

$$(11) \quad \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \end{bmatrix} = \begin{bmatrix} 0 & 0 & B_{13} & B_{14} \\ 0 & 0 & B_{23} & B_{24} \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \end{bmatrix} + \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & 1 & -1 \end{bmatrix} \begin{bmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \\ \xi_4 \end{bmatrix} + \begin{bmatrix} \delta_1 \\ \delta_2 \end{bmatrix}$$

In both models, it is assumed that the following pairs of latent exogenous variables have nonzero covariances: ξ_1 and ξ_2, ξ_3 and ξ_4, ξ_1 and ξ_3, ξ_2 and ξ_4. This suggests that for an individual the cognitive processes that generate normative and utilitarian perceptions are driven by common causes (not specified explicitly in the model), as are the processes that generate normative and utilitarian expectations. As well, we posit that both perceptions variables and both expectations variables covary; that is, they are driven by unknown common causes. The final specification is that both endogenous latent variables are uncorrelated but have disturbance terms. The induced variables have no errors or disturbances associated with them.

The two path models are displayed in figure 4. The observable variables and errors associated with the latent variables are suppressed for clarity.

Insert figure 4 about here

Empirical Results

All models are fit to the data using AMOS, a commercial software package for SEM and confirmatory factor analysis (Arbuckle and Wothke, 1995). Model parameters are estimated using a maximum likelihood fitting algorithm that minimizes

$$(12) \quad \hat{F}_{ML} = F_{ML}(\mathbf{S}, \Sigma_{ML}) = \ln\left|\Sigma(\Theta)_{ML}\right| - \ln\left|\mathbf{S}\right| + \mathrm{tr}\left[\mathbf{S}\Sigma(\Theta)_{ML}^{-1}\right] - (p+q)$$

where $\mathbf{S}$ is the sample covariance matrix of the observable variables, $\Sigma(\Theta)$ is the model's implied (estimated) covariance structure given the parameter vector Θ which restricts the implied moment matrix, and $p+q$ is the number of observable variables. An advantage of using ML estimation is that (N-1) $\hat{F}_{ML}$ is a chi-square distribution with $s - t$ degrees of freedom, where s is the number of nonredundant elements of **S** and t is the number of estimated parameters. One can use the X^2 statistic as a measure of global model fit, particularly when comparing alternative models fit to the same covariance matrix.

Most SEM software packages generate a large number of fit indices. AMOS routinely reports 22 measures of fit. Most are functions of the noncentrality parameter, a weighted sum of squared discrepancies between the unrestricted sample covariance matrix and the restricted, model-implied covariance matrix. The various indices adjust the noncentrality parameter to allegedly account for parsimony and sample size. Parsimony is, in turn, based upon s and t, as above. The fit indices attempt to account for the fact that saturated models ($s = t$) always have perfect fit, whereas very parsimonious models (t is small) generate larger discrepancies. Likewise, large sample sizes tend to increase the noncentrality parameter. The formulae for the test statistics and the logic behind them can be found in McDonald and Marsh (1990) and Schermelleh-Engel, Moosbrugger, and Müller (2003).

McDonald and Ho (2002) caution that the global measures of fit are poorly justified on both theoretical and empirical grounds and that their behavior when used across different estimated models and data may be eccentric. Thus, one should use the global fit measures with caution and only when combined with a visual examination of the standardized discrepancy matrix to see if the misfit is driven by a few large elements or a general scatter of discrepancies. The root mean residual (RMR) of the discrepancy matrix and histogram of the residuals about the mean are useful. The root mean square error of approximation (RSMEA), chi-square, and comparative fit indices are the most commonly reported global fit indices.

The exogenous (identity) measurement model is fitted to the sample covariance matrices for each of the three regions. To test the hypothesis that the three samples are drawn from the same population (i.e. regionality doesn't matter), the three regional models are nested in a hierarchical model. The hierarchical model imposes three constraints to the model fit:

(a) the measurement weights (factor loadings) are identical across regions,

(b) the structural covariances are identical across regions, and

(c) the measurement residuals (δ_i) are identical across regions.

The constraints are in order of restrictiveness. One expects that increasing the restrictions will create poorer fit relative to a model that permits the parameters to be uniquely estimated by region. Table 4 shows two measures of model fit, the chi-square per degree of freedom and the RMSEA for the nested hierarchical model. Both measures show that the fit actually improves slightly going from the unconstrained (all regional parameters are unique) to the most restrictive (all δ_i equal) model. The RMSEA under .05 indicates a good fit. A visual inspection of the standardized discrepancy matrix shows that only 12 of the 136 elements of the matrix are larger than 0.20 while the standardized RMR is .074. These measures of fit indicate that the samples reflect a common population with common identification behavior.

Insert table 4 about here

The unstandardized estimates of the exogenous model are given in table 5. All estimates for the factor loadings (Λ_x) and for the structural covariances (**Φ**) are highly significant. The standardized coefficients are shown in the path diagram (Figure 2), where all coefficients are normalized to their standard deviations so as to impute "relative importance" and make interpretation easier. Standardized factor loadings appear on the arrows between the latent variables and the associated observable variables. Covariances appear next to the nondirected (double-ended) arcs between the latent variables.

Insert table 5 about here

Insert figure 2 about here

The same hierarchical estimation process is followed for testing the robustness of (9) across the three regions. Table 6 shows the that the chi-square per degree of freedom increases modestly from the unconstrained to the most restrictive model (all ε_i equal). Clearly the restriction that the factor loadings are equal across the regions improves model fit. The additional restrictions equilibrating structural covariances and measurement residuals force slightly poorer fit, but the closeness of the fit measures to those of the unconstrained model permit us to treat the three samples as coming from the same population. The standardized root mean residual is 0.09 and there are only 4 discrepancies that indicate poor fit. The strength of the parameter estimates (Table 7) also encourages this choice. Finally, we accept the hypothesis that the behavior in the commitment model is identical across the three regions so that we can develop a single structural model that links the two measurement models together. Figure 3 illustrates the standardized estimates for the endogenous measurement model.

Insert table 6 about here

Insert table 7 about here

Insert figure 3 about here

We estimate the two alternative SEMs on the combined data from the total population of 1359 responses. The estimates are shown for the coefficients of the path models in table 8 and selected fit statistics are shown in table 9. All of the other estimated parameters are suppressed in table 8 as they are nearly identical between the two models, especially the factor loadings on the measurement models. All standardized parameter estimates are shown in figures 5 and 6. It is apparent from table 9 that there is not much to choose between the alternative models with respect to fit indices. In fact, for nearly all of the fit indices that are derived from the noncentrality parameter, the differences between the two models are at the third decimal point.

Insert figure 4 about here

Insert table 8 about here

Insert table 9 about here

Insert figure 5 about here

Insert figure 6 about here

The differences lie in the significance of the estimates of the path model coefficients and their interpretability. The four B_{ij} parameters that relate the induced variables to the commitment variables are highly significant. None of the eight γ_{ij} estimates has the same level of significance as the parameters on the induced variables, although five are significant at $p < .02$ or better. Interpreting the eight γ_{ij} parameters is not easy. As expected utilitarian identity increases ("I believe my coop should act more like a business"), both affective and continuance commitment increase. However, all other exogenous latent variables cause both affective and continuance commitment to decrease. In this model, it is not clear how commitment behavior changes given relative changes between perceived and expected identity. If normative identity expectations decrease ("I believe my coop should act less like a family") then both affective and continuance commitment will increase. Moreover, if the member perceives that the coop is actually becoming less like a family, then affective and continuance commitment will also increase. On the other hand, if perceptions and expectations for utilitarian identity move in the same direction, there are conflicting consequences for both types of commitment.

The interpretation of the induced variable model is as follows. If the gap between normative expectations and normative perceptions of cooperative identity decreases (more coherence in this identity construct), then both affective and continuance commitment increase. If the gap between utilitarian perceptions and expectations decreases, then both affective and continuance commitment decrease. That is, if either utilitarian identity expectations drop relative to the perceived level, or if the perceived level of utilitarian identity rises relative to expectations, then the member is less committed to stay with the cooperative, *ceteris paribus*.

How does one evaluate the foregoing interpretation? The key is to follow Pearl's (2000) interpretations of SEM parameters, wherein the coefficient for a given arc in a path model does not determine either the total effect or the direct effect of one exogenous variable on an endogenous variable. Rather, the total effect of one variable on another is measured by holding that variable constant and letting all other variables in the model run their course. This reasoning takes into account that there are antecedent variables in the causal (path) model that are expressed through intervening variables, including those that are connected by nondirected arcs. Thus, we need to interpret the B_{ij} – the effects of the identity comparison variables on the commitment variables in light of what is antecedent. An increase in normative perception? A decrease in normative expectations? How would a change in either exogenous variable causally affect all other exogenous variables through their covariances, then through the induced variables to the commitment variables, a long string of partial effects.

The interesting result is that it appears that normative identity and utilitarian identity appear to conflict in the cooperative organization. A positive change in normative perceptions lowers the identity gap and increases commitment. A positive change in utilitarian perceptions has the opposite effect. This implies that, *ceteris paribus*, a rise in the utilitarian identity makes the cooperative appear to be more like a business and the member may defect to a non-cooperative competitor. The indirect effect may be that that the perceived increase in the utilitarian identity causes a decrease in the perceived normative identity, which will also cause defection from the cooperative. This interpretation means that the original definition of a hybrid-identity organization by Albert and Whetten (1985) is borne out in agricultural cooperatives. Albert and Whetten define these to have inherently incompatible value systems which are linked in the organization but in conflict. One can interpret this to mean that movement toward a higher perceived normative identity necessarily moves one towards a lower perceived utilitarian identity. Normative and utilitarian identity are thus captured on a unidimensional scale, rather than in two-dimensional space.

This interpretation is consistent with the duopoly/duopsony models of Fulton (1999), Fulton and Giannakas (2001), and Karantininis and Zago (2001). In their models, there is some dimension of behavior that distinguishes cooperatives from investor-owned firms besides transaction prices. We see this dimension as the normative – utilitarian identity continuum. Cooperative members place positive value on locating themselves in a cooperative where they find congruence with their normative identity expectations. To the degree those expectations are not met, cooperative members will defect.

This article makes four contributions to our understanding of the phenomenon of cooperative member commitment. First, it puts a name to the ideological attributes used in the recent duopoly/duopsony models of commitment. We explicitly model a utilitarian identity, which can be shared with competitor investor-owned firms, and is central to the conceptual models of Fulton, Fulton and Giannakas, and Karantininis and Zago. We also explicitly model a normative identity which is tacit in their conceptual models. In theory, the normative identity conflicts with the utilitarian identity within a hybrid identity firm. In the duopoly/duopsony model, this conflict would be greatest in the center of the continuum where the cooperative is insufficiently distant in a Hotelling sense from the IOF.

In this article we test the model with primary data and find that the comparison between perceived and expected identities drives member commitment. We pretested several measurement scales for the identity variables and chose a subset of four manifest variables for each latent identity variable. These scales can be used to assay what is commonly called member relations. The model fit substantiates the value of these scales. The measurement scales for commitment were derived from a larger set of scales used by Meyer and Allen. Because these scales had been tested empirically in previous work, the fit for the commitment measurement model is unsurprising.

The third contribution is the cross-national test of the theoretical constructs. Both the identity model and the commitment model that are imbedded in the structural model are robust across the sample data from France, Canada, and the United States. The implications of this are that the constructs are common to cooperative member behavior despite cross-cultural differences that exist. In addition, the measurement models for the theoretical constructs appear to be stable and reliable in replication.

The fourth result is that the utilitarian and normative identities appear to be poles on a single dimension. This result substantiates both the theoretical work by Albert and Whetten in the organizational theory literature and the theoretical work by Fulton in agricultural economics. In the development of the structural equation model this unidimensionality was not specified as a restriction. Compared to the covariance structure of the empirical data, the structure of the induced variable model has a good fit and is more easily interpreted compared to the alternative structural model. The induced variable model implies that the utilitarian identity and the normative identity are not orthogonal, representing a two-dimensional map of membership, but are rather in conflict on the continuum proposed by Fulton (1999).

Future work on commitment should include more elaboration of the commitment decision. First, following Fulton's discussion, the Hirschman model of exit/voice/loyalty should be empirically tested as the outcome variables. Further, one should test whether there is a sequential and causal relationship from identity comparison to affective and continuance commitment, as we have found, and thence to an overt patronage/defection decision. Finally, alternative measurement models for identity should be tested. Despite the robustness of the measurement model presented here, other scales should be tested as manifest variables for the latent variables of normative and utilitarian identity.

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Table 1. Latent Variables

Variable name	Parameter	Label on SEM Output
Cognitive commitment	η_1	CCS
Affective commitment	η_2	ACS
Perception of (actual) normative identity	ξ_1	NORMPER
Expectation of normative identity	ξ_2	NORMEXP
Perception of (actual) utilitarian identity	ξ_3	UTILPER
Expectation of utilitarian identity	ξ_4	UTILEXP
For Induced Variable Model Only:		
Comparison between normative expectations and perceptions	η_3	NORMCOMP
Comparison between utilitarian expectations and perceptions	η_4	UTILCOMP

Table 2. Observable Variables for Identity (Exogenous) Model

Measurement Variables for Identity	**Perception**	**Expectation**
for perceptions: "Please indicate your perception of the importance this coop places on each of the following items." *for expectations:* "Indicate how important you feel these items should be to the coop".		
Utilitarian Identity		
price of products or services	x_9	x_{13}
customer service	x_{10}	x_{14}
Professionalism / expertise of staff	x_{11}	x_{15}
quality of products / services	x_{12}	x_{16}
Normative Identity		
member ownership and control in the coop	x_1	x_5
social relationships with other members	x_2	x_6
community involvement	x_3	x_7
commitment to the traditional cooperative ideals	x_4	x_8

Table 3. Observable Variables for Commitment (Endogenous) Model

Measurement Variables for Commitment

Affective Commitment	
I feel a sense of belonging to this coop	y_5
I feel like part of the family at this coop	y_6
I feel emotionally attached to this coop	y_7
This co-op has a great deal of personal meaning for me	y_8
Continuance Commitment (reverse scaled)	
I feel I have too few options to consider leaving this coop	y_1
One of the negative consequences of leaving this coop would be the scarcity of available alternatives	y_2
It would be very hard for me to leave this coop now even if I wanted to	y_3
Too much in my life would be disrupted if I decided I wanted to leave this coop now.	y_4

Table 4. Fit Measures for Hierarchical Model of Identity Measurement

Model	Number Parameters	X^2	d.f.	P	X^2/d.f.	RMSEA
Unconstrained	152	2329.840	392	.000	5.943	.043
Measurement weights	116	2398.351	428	.000	5.604	.041
Structural covariances	86	2606.011	458	.000	5.690	.042
Measurement residuals	38	2848.994	506	.000	5.630	.041

Table 5. Parameter Estimates for Exogenous (Identity) Measurement Model

Factor	Loading		Estimate	S.E.	C.R.	Label
commit	<--	normper	.948	.040	23.929	λ^x_4
cmmty	<--	normper	.976	.039	24.994	λ^x_3
social	<---	normper	.948	.040	22.808	λ^x_2
owner	<---	normper	1.000			λ^x_1
commit2	<---	normexp	1.270	.059	21.598	λ^x_8
cmmty2	<---	normexp	1.303	.056	23.113	λ^x_7
social2	<---	normexp	1.499	.064	23.178	λ^x_6
owner2	<---	normexp	1.000			λ^x_5
quality	<---	utilper	.946	.040	26.828	λ^x_{12}
profess	<---	utilper	1.025	.042	26.819	λ^x_{11}
service	<---	utilper	1.195	.043	27.516	λ^x_{10}
price	<---	utilper	1.000			λ^x_9
quality2	<---	utilexp	1.169	.037	31.652	λ^x_{16}
profess2	<---	utilexp	1.189	.040	29.546	λ^x_{15}
service2	<---	utilexp	1.185	.037	31.964	λ^x_{14}
price2	<---	utilexp	1.000			λ^x_{13}
Covariance						
normexp	<-->	utilexp	.223	.016	14.030	
normper	<-->	utilper	.962	.042	23.042	
normper	<-->	normexp	.801	.039	20.668	
normexp	<-->	utilper	.349	.027	13.060	
normper	<-->	utilexp	.166	.019	8.734	
utilper	<-->	utilexp	.324	.019	17.161	

Table 6. Fit Measures for Hierarchical Model of Commitment Measurement

Model	Number Parameters	X^2	d.f.	P	X^2/d.f.	RMSEA
Unconstrained	69	621.970	75	.000	8.293	.052
Measurement weights	51	652.269	93	.000	7.014	.047
Structural covariances	42	939.586	102	.000	9.212	.055
Measurement residuals	18	1099.216	126	.000	8.724	.056

Table 7. Parameter Estimates for Endogenous (Commitment) Measurement Model

Factor Loading			Estimate	S.E.	C.R.	Label
options	<---	ccs	1.000			λ^y_1
alternat	<---	ccs	1.127	.057	19.844	λ^y_2
leavecop	<---	ccs	1.738	.071	24.648	λ^y_3
disrupt	<---	ccs	1.681	.068	24.635	λ^y_4
belong	<---	acs	1.000			λ^y_5
family	<---	acs	.951	.043	22.029	λ^y_6
emotion	<---	acs	1.663	.075	22.294	λ^y_7
meaning	<---	acs	1.445	.063	22.880	λ^y_8
Covariance						
ccs	<-->	acs	.166	.023	7.125	

Table 8. Estimates of Path Model Coefficients from SEMs

Estimates of Path Model Coefficients for Induced Variable Model

Latent	Variable	Names	Estimate	S.E.	C.R.	P	SEM Label
normcomp	<---	normexp	1.000				γ_{31}
normcomp	<---	normper	-1.000				γ_{32}
utilcomp	<---	utilexp	1.000				γ_{43}
utilcomp	<---	utilper	-1.000				γ_{44}
ccs	<---	normcomp	-.653	.114	-5.718	<.001	β_{13}
acs	<---	normcomp	-.398	.068	-5.816	<.001	β_{23}
ccs	<---	utilcomp	.725	.087	8.310	<.001	β_{14}
acs	<---	utilcomp	.445	.055	8.038	<.001	β_{24}

Estimates of Path Model Coefficients for Full Γ Matrix Model

Latent	Variable	Names	Estimate	S.E.	C.R.	P	SEM Label
acs	<---	normper	-.032	.084	-.377	.706	γ_{11}
acs	<---	normexp	-.203	.065	-3.150	.002	γ_{12}
acs	<---	utilper	-.178	.064	-2.787	.005	γ_{13}
acs	<---	utilexp	.264	.066	3.990	<.001	γ_{14}
ccs	<---	normper	-.130	.076	-1.719	.086	γ_{21}
ccs	<---	normexp	-.136	.058	-2.355	.019	γ_{22}
ccs	<---	utilper	-.073	.057	-1.28	.199	γ_{23}
ccs	<---	utilexp	.200	.059	3.393	<.001	γ_{24}

Table 9. Fit Indices for Alternative SEMs

Model	Number of Parameters	Chi-square	d.f.	X^2/d.f.	RMSEA
Induced Variables Model	57	1762.21	243	7.256	0.068
Full Γ Matrix Model	60	1780.31	240	7.418	0.069

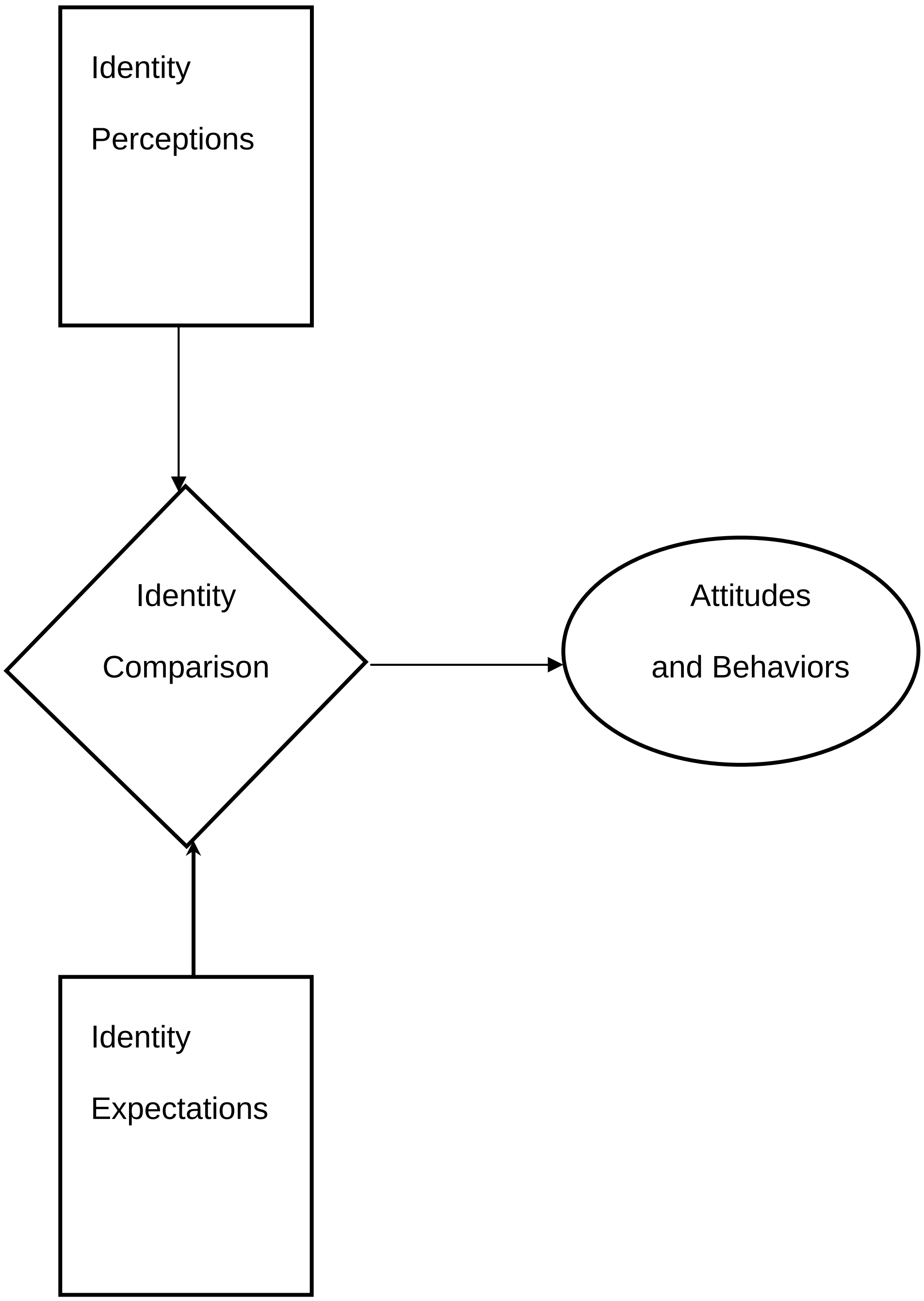

Figure 1. **Theoretical Model of Organizational Identity and Commitment**

Source: Foreman and Whetten

Figure 2. Standardized Estimates for Exogenous (Identity) Measurement Model

Figure 3. Standardized Estimates for Endogenous (Commitment) Measurement Model

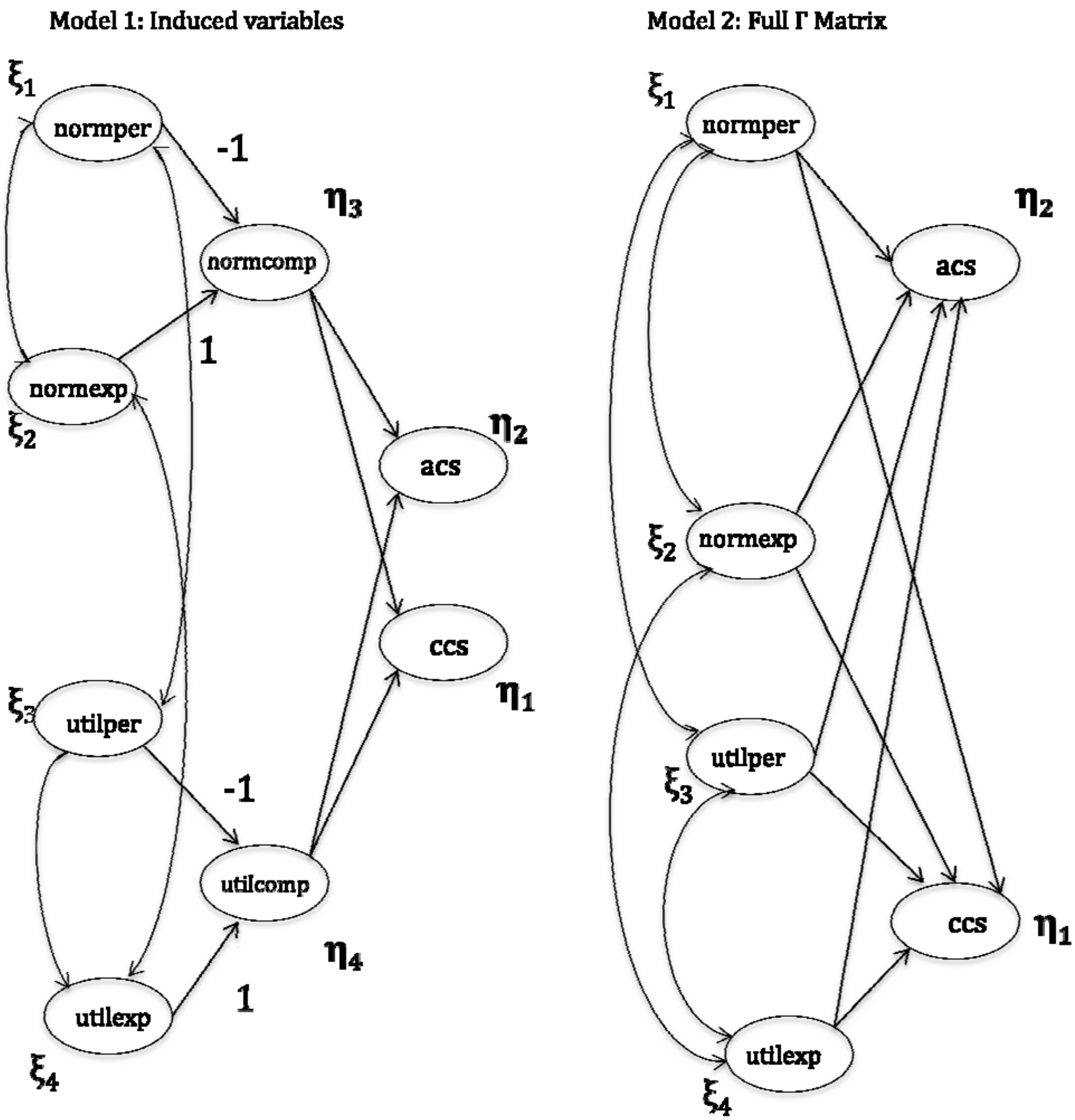

Figure 4. Comparison of Path Models

Figure 5. Induced Variable Model Estimated with Standardized Data

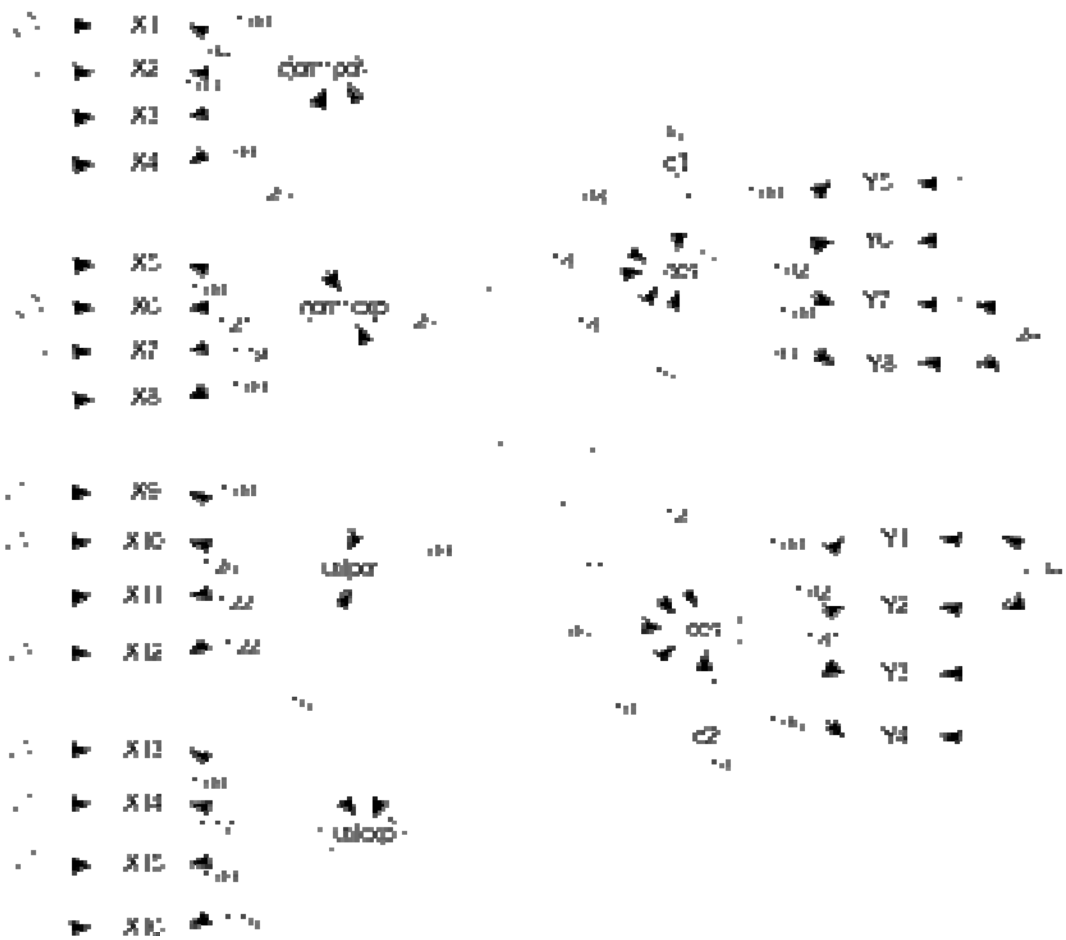

Figure 6. Full Gamma Matrix Model Estimated With Standardized Data