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Is the Household-Based Convoy a Role-Related Support Network?

Chaonan Chen[1], Pei-shan Liao[2], and Hui-lin Lin[3]

Abstract

Based on role theory, a household-based convoy (HbC) was proposed as a support system comprised of four kinds of networks: household types, family, kinship, and friendship. To test the feasibility of the support network concept, data from the 2001 Taiwan Social Change Survey were used to derive a latent structure with four latent classes. These classes consisted of the "pre-family convoy," "pro-social convoy," "mature convoy," and the "extended convoy." Their network characteristics revealed that the four latent classes corresponded to stages in the family life course. Moreover, these convoy subtypes had differential intergenerational support functions. Respondents from the pre-family and the pro-social convoys were found to provide fewer types of support to their parents but received more types of support from them. The findings also indicate that the household-based convoy is a role-related support network.

Keywords

social support, convoy, family

[1]Asia University and Academia Sinica, Taipei, TAIWAN
[2]Research Center for Humanities and Social Sciences, Academia Sinica, Taipei, TAIWAN
[3]National Taiwan University, Taipei, TAIWAN

Corresponding Author:
Chaonan Chen, Institute of Economics, Academia Sinica, 128 Academia Road, Nankang, 11529, Taipei, TAIWAN
Email: cchen@econ.sinica.edu.tw

Drawing on role theory, Kahn and Antonucci (1981) used the concept of a "convoy" to refer to the structure within which support is given and received between a focal person and their convoy members on a dyadic basis. In the hypothetical example they provided, Kahn and Antonucci (1981) described a convoy as containing three circles. The innermost circle included the spouse, close family, and close friends; the middle circle consisted of the family, relatives, and friends, while the outer circle encompassed distant family, coworkers, and neighbors. As one's role and role sets change over one's life course, so too do the elements of one's convoy. A continuous life span–oriented, hierarchical view of social relations was offered by the convoy framework in a study of intergenerational relations (Antonucci and Akiyama 1991). It has been proposed that a cross-sequential design would be required to test the life-course schema (Kahn and Antonucci 1981). It was also recommended that both primary and secondary ties be integrated into the support network.

While the convoy model helps in understanding the evolution of support existing between the focal person and convoy members, there has yet to be a consensus over the composition of the support network within the academic community (Peek and Lin 1999). There have been diverse approaches toward the selection and placement of convoy members, which reflects their role and supportive functions within the network. A key factor in the selection of convoy members, as originally suggested by Kahn and Antonucci (1981), lies in the closeness and stability of the relationships held with other convoy members. The assessment of the importance or closeness of a relationship is, however, subjective and difficult to measure (Peek and Lin 1999). Moreover, allowing all types of people to be potential candidates for each of the three circles does not provide clear guidance for government agencies involved in social welfare (Chen 2006b). On the other hand, the availability and completeness of a convoy constitutes another important issue. Despite the popular perception held by the American elderly, who believe in the abundance of social support resources available to them, studies have found that such aid actually falls short when a situation of need arises. Such studies categorized the elderly into two distinct groups depending on the presence or absence of support convoys. Findings indicated that there was no evidence of a complex, multidimensional network of social support for the elderly (Hogan and Eggebeen 1995).

In relation to the importance of kin in informal social support, the ease with which it can be defined, and the availability of support resources, a household-based convoy (HbC) was proposed to examine the transition of the social support structure under a rapidly changing population (Chen 2006a). This was not limited to coresiding family, but also included non-coresiding family

members, relatives, and friends, with components arranged by social distance. Since the availability of the four components supposedly varies over one's life course, it was therefore referred to as a type of convoy.

Although it has been shown that individuality and completeness of layers have an effect on intergenerational support exchanges (Chen 2006a, 2006b; Chen and Lin 2008), it is important to test the relationship between household-based convoys and role theory, and thereby assess the suitability of the label *convoy*. That is, it was our intention to determine whether there was a network structure underlying the framework corresponding to role changes over one's life course and has differential support functions. A positive correlation would substantiate the view that the HbC is a role-related support network.

The subsequent sections of this article include a literature review and a description of the data and method. The identification of HbC subtypes using latent class analysis follows. Multivariate analyses conducted on the support functions of convoy subtypes are presented subsequently, and the article concludes with a discussion of the implications of using the HbC model for research in family studies.

Literature Review

The conceptual cornerstone of an HbC may be viewed from two perspectives: the convoy and a modified definition of the family in the HbC model approach. Literature on the convoy model is first reviewed, followed by the incorporation of a modified definition of the family into an HbC model, with a special emphasis on its application to Chinese and other family-focused societies.

The Convoy Model

The convoy model of social support provides one approach to integrating social support and social networks (Peek and Lin 1999). Working from role theory, Kahn and Antonucci (1981) proposed that a convoy is the structure within which support is exchanged between a focal person and his or her convoy members. One's convoy is initially linked to them through the performance of one's related roles. As one progresses through various stages of their life, their role also changes. Consequently, convoy members may change relative to these changes in role.

According to Kahn and Antonucci (1981), members of a convoy structure can be stratified into three concentric circles based on the closeness and stability

of their relationship with the focal individual. The outermost circle represents people who are not close to the focal individual, at least on the basis of the roles they play. In this circle, membership is considered to be unstable and extremely vulnerable to concomitant changes in role. Members of this circle may consist of supervisors or coworkers. Conversely, the middle circle is composed of family members, friends, or coworkers. Relationships held with members of this circle are somewhat role-related, but the frequency, places, and subjects of their interaction with the focal individual are outside the boundaries of the role. Such relationships are thereby likely to change over time as well. The inner circle of a convoy consists of people especially close to the focal individual, such as close friends or family members who are generally important sources of support. Their inclusion within the inner circle is more the result of the quality of their support rather than their role or familial relationship. This relationship is thus likely to remain fairly stable, despite changes in job or residence. By using a mapping method to elicit information on types of support exchanges, circle placement has been found to have a significant effect on the provision and receipt of support. In particular, members of the inner circle provide more types of support than outer circle members (Antonucci and Akiyama 1987).

While the conceptual definition of a convoy has been generally accepted, the construction of convoy networks has not been met with a consensus (Antonucci and Akiyama 1991; Hogan and Eggebeen 1995; Peek and Lin 1999). This may in turn influence the evaluation of the support function. For example, the generation of convoy networks may elicit data typifying an individual as either important or supportive. However, it is not necessarily the case that a contact must be supportive to be important in the focal person's inner circle (Peek and Lin 1999). In addition, the coresidence of members implies the availability of frequent contact with and potential support for the focal person, as family structure may constrain intergenerational assistance (Hogan, Eggebeen, and Clogg 1993). Interactions among family or household members may thus differ from those with family members who live apart from the focal individual. As such, a different design of convoy placement for coresiding and non-coresiding family members is thus required.

Additionally, network studies have indicated that networks with higher proportions of kin are more likely to be supportive (Horwitz 1977; Litwak 1960; Wellman and Wortley 1990). Moreover, kinship ties are better able to remain active and intimate over greater distances than friendship ties (Wellman and Wortley 1990). Kinship therefore deserves a more prominent position within hierarchical support structures. To account for the importance of kinship in the network of social support, an HbC with four hierarchical divisions based

on kinship distance was proposed for the study of intergenerational support exchange (Chen 2006a).

A Household-Based Convoy

The household-based convoy framework is predominantly derived from the concepts of Fei (1992) and Kahn and Antonucci (1981). According to Fei (1992), the basic structure of a traditional Chinese rural society in 1947 could be likened to a model of differential association or a hierarchically structured network. This pattern of organization was composed of distinctive networks extending from each individual's personal connections, with each standing at the center of the circle constructed by his or her social influence or relationships. These circles are similar to the ripples appearing on the surface of a lake when a stone is thrown into it. They are highly elastic and may expand or contract as the power in the center changes. Fei (1992) further proposed that kinship is the most important relationship for Chinese, making it somewhat comparable to the traditional view of American society (see Hogan and Eggebeen 1995). In the extreme, every family regards its own household as the center and draws circles around it. In contemporary Taiwan, a descendant of Chinese culture, the household has still been viewed as a viable family unit in numerous large sample surveys (Yi and Lu 1999). Intergenerational support exchanges have continued between a person's own family and the households of his or her parents (Chen 2006a; Chuang 1972; Greenhalgh 1984), attesting to the supportive roles of non-coresiding family members. In other words, it is clear that intergenerational support exchanges require the household as the base.

In view of their importance, non-coresiding immediate family members are placed in the second circle of an HbC. We may thus view the two inner circles of an HbC as a broader definition of family, akin to a modified extended family (Hoyert 1991; Litwak 1960). To completely reflect the importance of family lineage, other frequently contacted relatives are put in the third circle. Finally, close friends are included in the fourth circle to convey the increasing importance of secondary ties in a person's support system (Fisher 1981; Fu 1995). In brief, this four-circle design for an HbC model is ideally comprised of three features: (1) It can be viewed as a composite support network that focuses on the dyadic exchange behavior between a focal person and members of his or her support networks; (2) since only persons with whom there are frequent contacts are included in the system, we are able to study real support exchanges rather than perceived support (Vaux 1988); and (3) it is a

core network because of frequent contact and is more conducive to support exchanges (Marsden 1987).

HbCs have been empirically validated using data from Taiwan. It is a hierarchically structured network based on kinship distance. The two inner circles—coresiding and non-coresiding family members—act as a modified extended family (Chen and Lin 2008). When the two outer circles—other frequently contacted relatives and friends—are controlled, the two inner circles have a significant effect on intergenerational support exchanges for certain support tasks. In addition, intergenerational support exchanges are also affected by sex, age, income, and exchange strategy. Exchange strategy, such as reciprocity that may play a key role in sustaining an exchange relationship among kin (see Hogan et al. 1993), has been the most important variable for several support tasks (Chen and Lin 2008). As the constituent households of a modified extended family become spatially separated, the rules and content of support exchange for the coresiding members of a traditional extended family are inevitably modified. The rules of exchange have shifted from the rule of need to the equity rule (Hwang 1987; Lee, Parish, and Willis 1994; Shi 1993; Silverstein, Li, and Zhang 2002). Following the rule of need, every member of a network should do his or her best and in return take whatever he or she needs, including affective support. The equity rule, on the other hand, is associated with the idea of reciprocating means. In responding to the contextual change, exchange strategies need to be included in the analytical model.

Theoretically, an HbC is rooted in role theory. Previous studies have indicated that some layers of the framework are allowed to be absent to reflect role changes in movement over the life course. The association between social support and the construction of an HbC was revealed by means of individual layers. In doing so, the convoy does not concurrently take into account the integration of different types of social networks. To examine whether an HbC as a whole is a support network, subtypes of an HbC are derived from combining the categories of the four layers and processed with latent class analysis (LCA; also known as latent class models) to reveal intragroup heterogeneity in response patterns. LCA is a statistical method for finding subtypes of related cases (latent classes) from multivariate categorical data. The basic goal of latent class analysis is to characterize a discrete latent variable through the cross-classification of responses to two or more observed categorical variables (McCutcheon 1987). This enables researchers to identify a set of mutually exclusive latent classes within each of which the manifest variables are mutually independent. The results can be used to classify cases according to their most likely latent classes on the basis of cell membership in the manifest variable cross-classification. The goodness of fit of latent class models

can be assessed with a comparison of the likelihood ratio chi-square (L^2) or the Pearson chi-square (χ^2) values with the degrees of freedom for a model. Other widely used indices for assessing the goodness of fit for a model include log likelihood (LL), the Bayesian information criterion (BIC), and the Akaike information criterion (AIC; Magidson and Vermunt 2001, 2003; McCutcheon 2002).

A previous study has used LCA to understand the association of family structure and intergenerational support (Hogan et al. 1993). In that case the examined latent structure was a classification of supports of intergenerational exchanges, rather than of household types and social networks. Specifically, the analysis aims to see if latent classes derived from the four circles of an HbC are derivable and have differential support functions. Given that this is the case, HbC may be regarded as being role related and able to serve as a feasible support network.

The Data and Method

The Data

The data used in this study were obtained from the 2001 Taiwan Social Change Survey (Phase 4, Wave 2), which was conducted by the Institute of Sociology, Academia Sinica. Household surveys were delivered to randomly selected adults aged 20 years or older within each selected municipality. Using three-stage stratified sampling based on the urbanization level of townships as the primary sampling unit (PSU), the probability proportional to size (PPS) sampling method was used in the first two stages—township and village or li under townships, respectively. Finally, household-registered residents in each village/li were systematically selected.

Since the sample was derived from Taiwan's household registration system, which is a de jure one, a substantial proportion of the households selected were expected to be unavailable for interviewing at the given addresses. A proportionately larger sample was thus drawn, given that the incompletion rate was expected to be high. In total, 1,979 interviews were successfully held (Chang and Fu 2002), signifying a completion rate of 54.1%. When adjustment was made for factors related to unqualified interviews, the completion rate was estimated to be around 70.50%. Compared with the population listed in the household registration system for those aged 20 years or older in the year of the survey, this sample had a similar gender distribution. However, it did have 7.5% more individuals belonging to the 20 to 34 years age group and slightly less within the 35 to 54 years and the 60 years and older age

groups (data not shown). Since the household registration record itself could not serve as the gold standard for evaluation due to the underestimation of the number of young returning migrants whose household registration records had been deleted (Chen and Liu 2002), the differences in age structure may suggest that caution is needed in making generalizations.

The Construction of a Household-Based Convoy

In keeping with Kahn and Antonucci's (1981) conceptualization, an HbC also focuses on the relationships between the focal person of the household and his or her convoy members. The placement of members in various circles, however, is based on kinship distance rather than on the closeness and stability of the dyadic relationship between the focal person and the convoy members. Moreover, the screening of convoy members is based on contact frequency, an indicator of cohesion or one's willingness to invest time and energy in interacting with group members. As only those who have contacted the focal person more than once a week are selected as convoy members, we may view the HbC as a core network that is more conducive to support exchanges (Marsden 1987).

Figure 1 depicts an HbC utilizing a linear sketch instead of circles. The innermost circle, household types, is first connected with non-coresiding family members to form a modified extended family. Kinship networks (composed of other relatives) and friendship networks (composed of friends) are sequentially added to form an HbC. Therefore, within the second to fourth circles, non-coresiding family members, relatives, and friends are added to the convoy based on their levels of contact with the respondent being more than once a week. Their order in the convoy structure reflects their kinship distance in relation to the respondent. However, they are assumed to play a complementary role in support exchanges. When the convoy is complete, each component network plays a different support function. In the event that the convoy is incomplete, other convoy members may step in to provide the needed support.

To simplify the construction of the HbC, we group households into four types. The remaining three networks are dichotomized into those with or without the networks based on the aforementioned frequency of contact. The data used for constructing household types were obtained from information regarding households with up to 11 coresiding members. Since family relationships under the influence of Chinese culture are complex, the grouping of household types involved two steps. The first step was to assign interviewees into several relevant categories based on their various relationships with

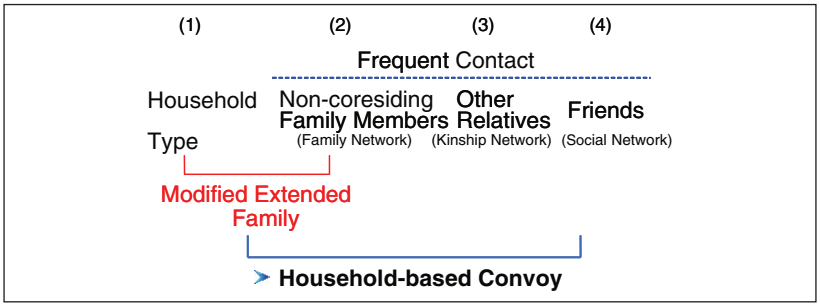

Figure 1. Linear sketch of a household-based convoy

other household members. After a process of trial and error, we divided the households into four categories, using the respondent as the focal person. The three-generation family (3G) included the focal person's spouse and their family members of both lineal descent and ascent. The two-generation family with spouse (2G+S) represented respondents who lived with their spouse and either their parents or their children. The two-generation family without a spouse (2G-S) described those who lived with their parents, while those who were not included in any of the aforementioned categories were classified as "other" (O), such as respondents who lived alone.The role of a spouse was emphasized in the categorization of household types here because they were considered the most important providers of support.

In the second step, we dichotomized the remaining three convoy circles, because our survey data contained abundant information on the components of family networks but only relatively limited information on kinship and friendship networks. We were able to obtain much information from the survey concerning non-coresiding parents, parents-in-law, details of up to six adult children, and the most frequently contacted siblings. Data gathered on relatives and friends, however, were limited only to those with whom the respondents had the most frequent contact. To simplify the construction of convoy subtypes, the friendship, kinship, and non-coresiding family circles were dichotomized as being either with or without the relevant circle members. This grouping method led to a $4 \times 2 \times 2 \times 2$ matrix of convoy subtypes, or a cross-classification of subgroups of the four convoy circles, resulting in a possible 32 convoy subtypes. These convoy subtypes were subsequently analyzed using latent class analysis to reveal their underlying latent structure.

On average, an HbC had 4.48 coresiding family members and 6.41 frequent-contact non-coresiding family members, including parents, parents-in-law,

children, and siblings (data not shown). The proportions of frequent-contact relatives and friends were 31% and 65%, respectively. In this context, "frequent contact" is defined as regular visits of once a week or more.

One way of testing the appropriateness of the HbC typology was to examine whether the latent structure has different support functions. In following with the model of role theory, five types of support were selected for examination: sick care, household chores, advice, regular financial support, and irregular financial support. The initial examination sought to determine whether there were differences among latent classes, with classes being derived from the latent structure in terms of individual types and average types of support exchanged. This also allowed us to determine whether intergenerational support exchange in contemporary Taiwan is substantial and not limited to one role. Secondly, a logit regression was applied to ascertain whether there were differential support functions among the latent classes when other variables are controlled. We focused in particular on intergenerational support exchanges. A sample of 1,350 respondents who had parents available to exchange support was selected for the analysis.

The Latent Classes of the Household-Based Convoy

Since the responses to each of the four layers—the household, non-coresiding family members, relatives, and friends—may be grouped in various ways, there are several convoy combinations available for the construction of a latent convoy variable. In this study, a matrix consisting of 32 possible convoy subtypes was processed using the Latent Gold 4.5 software developed by Vermunt and Magidson (2005) to obtain a latent variable with several latent classes. To find a better fit for the data, several latent class models were tried as outlined in Table 1. It was noted that low values of log likelihood and BIC for the unconstrained models for four and five latent classes both fit the data well and are acceptable models (Agresti 1996). However, the higher LL and the classification error for the five-class model were less satisfactory, and the aforementioned results suggest that the four-class model is the more suitable choice.

The estimated probabilities of the responses for the four latent classes in terms of the components of an HbC (i.e., friendship networks, kinship networks, family networks, and household types) are reported in Table 2. The latent class probabilities represent the proportions of each of the latent classes among the four, while the conditional probabilities denote, for example, the expected probabilities for the friendship network for class 1, given that the

Table 1. Goodness of Fit of Latent Class Models for a Household-Based Convoy (n = 1,350)

Model	Log likelihood (LL)	BIC (LL)	p Value	Classification error
One cluster	4,059.79	8,162.83	1.6e-69	0.0000
Two cluster	3,944.00	7,967.29	9.1e-26	0.0061
Three cluster	3,920.58	7,956.49	4.8e-19	0.0951
Four cluster	3,869.62	7,890.60	0.020	0.1675
Five cluster	3,867.84	7,923.08	0.0035	0.2667

Note: BIC = Bayesian information criterion.

Table 2. Results of Latent Class Analysis (n = 1,350)

	Pre-family convoy	Pro-social convoy	Mature convoy	Extended convoy
Cluster size	0.1765	0.0981	0.4005	0.3249
Friendship network				
Yes	0.2866	0.9276	0.8929	0.9555
No	0.7134	0.0724	0.1071	0.0445
Kinship network				
Yes	0.4846	0.2929	0.0117	0.6666
No	0.5154	0.7071	0.9883	0.3334
Family network				
Yes	0.7954	0.7190	0.5209	0.7880
No	0.2046	0.2810	0.4791	0.2120
Household types				
3G	0.0000	0.0000	0.2799	0.3867
2G+S	0.0162	0.0000	0.6339	0.5640
2G-S	0.9759	0.1609	0.0861	0.0493
O	0.0079	0.8391	0.0000	0.0000
Log likelihood ratio (LL) = 3,869.62				
P value = 0.02				

Note: 3G = three-generation household; 2G+S = two-generation household with spouse; 2G-S = two-generation household without spouse; O = living with others.

latent variable applies to the same class. Each convoy subtype was assigned to one of the four classes based on the multiplication of conditional probabilities (McCutcheon 1987). The respondents from class 1 were characterized by a high probability for the family network but only a moderate probability for the kinship network and a low probability for the friend network. Moreover, most of them belonged to the 2G-S household type. Based on these network characteristics, class 1 was referred to as the "pre-family convoy." The estimated probability for the pre-family convoy was 0.1765; thus, about 18% of the respondents were classified as belonging to the pre-family convoy.

The class 2 respondents had a high probability for a friendship network. Their estimated conditional probability of having a kinship network was low, indicating that the respondents in class 2 did not have frequent contact with their relatives. In addition, the estimated probability of having a family network for the members was also high. Their household types were atypical given their corresponding stage in the life course. In addition, more than 80% of the class 2 respondents were in the O household type, followed by around one-sixth in the 2G-S household type. These characteristics indicated that the majority of class 2 respondents relied heavily on their social relations when in need. The class 2 convoy was thus referred to as the "pro-social convoy" and had an estimated probability of 0.10.

Unlike those in classes 1 and 2, the class 3 respondents had a high probability of enjoying friendship ties in tandem with a moderate probability of having family networks. Their probabilities of having kinship networks were lowest among the four latent classes (slightly beyond zero). Meanwhile, the majority belonged to the 2G+S household type, while a quarter were affiliated with 3G households. These network characteristics were suggestive of having passed the family formation stage with others transitioning to the three-generation stage. This class was thus referred to as the "mature convoy." Its estimated probability was the highest among the four latent classes, accounting for 40% of total respondents.

Similar to those in class 3, the class 4 respondents for the most part recorded high conditional probabilities for friendship, kinship, and family networks. The composition of household types for this latent class was similar to that of class 3, with a higher proportion of 3G than the former. In brief, class 4 respondents not only had extended relationships in friendship, kinship, and family networks, but also had networks that consisted of extended family. Consequently, the class 4 convoy was referred to as the "extended convoy" and featured an estimated probability of 0.3249.

Given the household structure and network composition, the four convoy classes may be seen as reflecting abridged phases of the family life course as experienced by the focal individual. The similarity between the latent

structure of the HbC and the family life-course stages may be confirmed by the distributions of convoys by age, marital status, and the age of the youngest child. On the other hand, the likelihood of belonging to certain household types is expected to increase through successive stages of the life course, although a similar trend was not necessarily the case for convoy subtypes as indicated in Table 2. Respondents belonging to the pre-family convoy were generally the youngest in the cohort and reported no children (Table 3). Only 1% of pre-family convoy respondents reported being married or in a de facto relationship, while more than 43% of the respondents of the other classes were married or living with a partner, with their extended convoys featuring the highest proportion of married or partnered individuals (96.8%). The pre-family convoy represents the stage prior to the formation of the family, while the pro-social convoy includes the two phases of the family life course, namely, the phase prior to family formation and other family forms in middle age including divorce, widowhood, and the empty nest. Unlike the assumption of family formation in the later stages of the life course, both of the pre-family and pro-social classes cover the family phases inclusive of beginning, early child rearing, preschool children, school-age children, and teenagers. These results suggest that the underlying dimension of the latent group—the pre-family, pro-social, mature, and extended convoys—corresponded to the family life-course stages in terms of age, marital status, and the age of the youngest child to some degree, while retaining its uniqueness.

It is nevertheless crucial to examine whether different types of the HbC reflect the life course variation of roles in intergenerational support exchange. The pre-family convoy typically represents earlier stages of the life course while pro-social convoys characterize the following stages. Our findings demonstrated that both these convoy types were relatively lacking in support, which we believe can be attributed to two possible reasons. Namely, some of these respondents were either beginning a career with relatively low pay or were unmarried, while others may have been forming a family or living with a disadvantaged status. The commonalities in each instance amounted to either a shortage of structural resources or an incomplete convoy structure. How the characteristics of the convoys are related to intergenerational support exchange is an important question with not only theoretical but also policy implications. We have thus drawn up the following two hypotheses in line with the perspective of the life course:

Hypothesis 1: Respondents who belong to the pre-family and pro-social convoys provide less support to parents than those of the mature and extended convoys.

Table 3. Latent Classes by Age and Marital Status and Age of the Youngest Child

	Latent Class			
	Pre-family convoy	Pro-social convoy	Mature convoy	Extended convoy
Age (mean year)	(28.06)	(37.75)	(40.74)	(40.22)
29 and younger	68.62	26.55	7.40	9.12
30 to 59	31.38	69.03	90.18	87.02
60 and older	0.00	4.42	2.42	3.86
Total	100%	100%	100%	100%
Marital status				
Married or living with a partner	1.03	43.36	93.35	96.84
Single	98.97	56.64	6.65	3.16
Total	100%	100%	100%	100%
Age of the youngest child				
Not applicable	91.72	76.11	20.39	13.68
0 to 6 years old	2.07	0.88	22.66	24.56
7 to 12 years old	2.07	1.77	21.30	23.51
13 to 20 years old	2.41	2.65	24.02	25.61
21 years or older	1.72	18.58	11.63	12.63
Total	100%	100%	100%	100%
Total				
%	17.65	9.81	40.05	32.49
n	290	113	662	285

Hypothesis 2: Respondents who belong to the pre-family and pro-social convoys receive more support from parents than those of the mature and extended convoys.

Support Functions of the Household-Based Convoy

In this section, the mean amount of types of support exchanged among convoy types will be examined first, followed by discussion of the exchange

of individual support and the determinants of these individual support exchanges.

In this study, questions related to five types of support were asked to determine whether respondents had received such supports from or provided support to parents within the previous year, as coded as 1 = yes and 0 = no. These types of support included sick care, household chores, advice, regular allowances, and irregular allowances. In addition to the five types of support, child care was included in the questions on support received from parents in the previous year.

Mean Amount of Types of Support Exchanged

The mean amount of types of support exchanged was used to indicate on average how many roles each convoy type may play in support exchanges. This study examined five types of support: sick care, household chores, advice, regular financial support, and irregular financial support. Therefore, with an ordinal measure, the mean amount of types of support exchanged was found to range from 0 to 5. Table 4 shows that the mean amount of types of support exchanged with parents for the four convoy types ranged from 1.53 to 2.83. In other words, the respondents and their parents played more than one role in social support. Table 4, however, did not exhibit a substantial difference in terms of the mean amount of types of support provided to parents among the four latent classes of convoy. The pre-family convoy and pro-social convoy had relatively fewer resources, as discussed previously, and thus provided slightly fewer types of support on average to their parents than other convoys. The results shown in Table 4 did not support our first hypothesis.

A different pattern was found for the mean amount of support received from parents. Members of the pre-family convoy, who were relatively lacking in terms of resources, received an average of 2.79 types of support from their parents. Those in the mature and extended convoys had relatively more resource and received on average only 1.68 and 1.94 types of support, respectively, from their parents. The mature and extended convoys were both significantly different from the pre-family convoy in terms of the mean types of received support. By way of contrast, members of the pro-social convoy received on average only 1.58 types of support from their parents. As mentioned earlier, the majority of respondents in the pro-social class was either in the stage prior to family formation or fell under the rubric of disadvantaged statuses. They were thus more distant to their original families, resulting in fewer types of parental support. Consequently, our second hypothesis was partially supported in terms of mean types of support received, thereby lending

Table 4. Mean Amount of Types of Support Provided to and Received From Parents Based on Convoy Types

Convoy type		Number of support provided	Number of support received
1	Pre-family convoy		
	Mean	2.71	2.79
	SD	1.29	1.38
	n	290	290
2	Pro-social convoy		
	Mean	2.70	1.58[a]
	SD	1.42	1.29
	n	113	113
3	Mature convoy		
	Mean	2.72	1.64[a]
	SD	1.37	1.43
	n	662	662
4	Extended convoy		
	Mean	2.76	1.83[a]
	SD	1.32	1.43
	n	285	285

a. Significantly different from the "pre-family convoy" at the .05 level.

support to the distinction between convoy subtypes and stages of the life course.

Exchanges of Individual Support

When exchanges of individual support were examined, we found that they differed with respect to the direction of exchange and the nature of individual support. In general, the proportions of upward support were greater than their downward equivalents, irrespective of convoy class. For example, 64.4% of the total sample had provided sick care support to their parents, while only 37.3% had received sick care support from their parents (see Table 5). One reasonable explanation for such a trend is filial piety, as reflected in the persistence of traditional values. Another possible reason is the aging of the

Table 5. Proportions of Providing Support to and Receiving Support From Parents by Individual Support and Convoy Types

	Convoy type				
Support type	Pre-family Convoy	Pro-social convoy	Mature convoy	Extended convoy	Total
Support provided to parents					
Sick care	63.4	61.9	63.3	69.1	64.4
Household chores***	72.8	55.8	53.5	55.1	58.1
Advice	70.7	71.7	70.7	71.2	70.9
Regular allowances	26.2	24.8	27.9	28.4	27.4
Irregular allowances***	37.6	55.8	56.6	52.6	51.6
Support received from parents					
Sick care***	63.4	40.7	27.6	31.9	37.3
Household chores***	75.9	33.6	33.1	36.5	43.0
Advice***	80.0	65.5	58.9	66.7	65.6
Regular allowances***	21.4	3.5	1.7	3.5	6.4
Irregular allowances***	32.8	8.0	9.7	9.8	14.5
n	290	113	662	285	1350

***Indicates significance at the .001 level.

population, insofar as the increase in life expectancy has increased the prevalence of chronic diseases and sick care needs.

It was also noted that the proportions of support exchange patterns varied with the nature of the support. We considered the exchange of advice to be a proxy for affective exchange, requiring only a limited amount of energy or

money. This is apparent in the highest proportions of respondents reporting this type of support, namely, 70.9% and 65.6% for the upward and downward exchange of advice, respectively. On the other hand, regular financial support was associated with the lowest proportions, with 27.4% reporting upward transactions, compared to 6.4% for downward transactions. The two instrumental kinds of support, sick care and household chores, are involved more with expending energy rather than money. Their exchange proportions thus lay between the two extremes.

The results outlined in Table 5 helped confirm the similarities between the underlying dimension for our HbC and the family life course. As a respondent's age increased, his or her network association also changed, as per the network characteristics of the convoy types described in "The Latent Classes of the Household-based Convoy" section. Accompanying changes in the family life course, a person begins to accumulate resources as a pre-family convoy, while the pro-social convoy is also relatively lacking in resources on account of having a relatively disadvantaged status. Family resources reach a peak in the mature convoy and either stabilize or decline after the formation of the extended convoy. Table 5 demonstrates that the extended convoy, due to its greater structural resources, was the most prominent providers of sick care and regular financial supports. On the other hand, the need for support peaked during the early stages of family formation as for those with pro-social convoy. The pro-social convoy thus had the lowest proportion of respondents providing instrumental support to parents, although a significant proportion of respondents provided irregular financial support.[1] Another possible reason for this is because parents of respondents in this category were also relatively young, or were at least still earning income. The youngest group, the pre-family convoy, was also lacking in resources, but possessed more spare time. Consequently, this group led in providing assistance for household chores but had the lowest rates of financial support among the four convoy types. Again, the exchange patterns of individual support were consistent with our first hypothesis.

When we analyzed the support received by respondents, the rates of exchange for various convoy types were largely altered. The youngest group, the pre-family convoy, received the most kinds of support from their parents. As much as 80% of respondents from this group received parental advice, while the proportions receiving the two instrumental types of support—sick care and household chores—were 63.4% and 75.9%, respectively. Proportions of respondents receiving regular and irregular financial support were as high as 21.4% and 32.8%, respectively. Conversely, those with pro-social convoys were relatively lacking in resources and received much less parental support

because of the distance of relationships with original families. Their degree of support received by these respondents was rather similar to those of the mature and extended convoys, with the exception of sick care support. Because they possess more abundant resources, the mature and extended convoys received significantly less support in every respect from parents compared to the pre-family convoy. These findings were once again consistent with our second hypothesis in terms of individual support exchange.

Determinants of Individual Support

In this section, we take the five types of individual support—sick care, household chores, advice, regular allowances, and irregular allowances—as the dependent variables. As these variables were dichotomized, a logit regression was performed to examine whether the effects of convoy types on the support exchanges stated previously were changed when socioeconomic status, contextual variables, and exchange strategies were controlled for. To estimate the net effect of convoy types, these controlled variables were treated as dummy variables, with the extended convoy acting as the baseline reference category.

In this analysis, the examination of the exchange strategy was not limited to exchanges in kind. Other types of support were accepted as potential substitutes in return. For example, in the case where one type of support provided to parents was analyzed, receiving five types of support was regarded as five exchange strategy variables and other independent variables, and vice versa. To obtain an insignificant likelihood ratio using chi-square values, the exchange strategy variables were selectively added to the regression models.

An individual's demographics and socioeconomic status was determined by means of four variables: gender, age, education, and monthly income. The inclusion of marital status resulted in regression models being unable to converge and was thus omitted. In the logit regression, females were the reference group and were assigned a code of 0, while males were assigned a code of 1. Age was categorized into three groups—29 years or younger, 30 to 59 years, and 60 years and older—to reflect stages of the life course. The oldest group was treated as the reference group. Highest level of education was divided into five categories: elementary school or less, junior high school, senior high school, associate degree, and college degree or beyond, with the last category as the reference group. Monthly income was also stratified into three categories: less than NT$30,000, NT$30,000 to NT$99,999, and NT$100,000 and above, with the lowest income bracket acting as the reference category.[2]

The contextual variables included urban residence, ethnicity, and the geographic proximity of non-coresiding parents. Urban residence included metropolitan and provincial cities, and remaining locations were classified as being rural residence, which was the reference group. Ethnicity was divided into four groups—Minnan, Hakka, Mainlander, and Other—with the Minnan, which characterizes the majority of our sample, acting as the reference group. The geographic proximity of non-coresiding parents was treated as a dichotomized variable. In this instance, the father's and mother's residence were treated as two separate indicators. A code of 1 was assigned to those living within 30 minutes by car, and those residing farther away were coded with a 0. The summary statistics for all independent variables are shown in the appendix.

The results of the logit regression, as shown in Table 6, partially support our two hypotheses. In principle, respondents in the pre-family and pro-social convoys have higher probabilities of receiving support but lesser probabilities of giving support compared to those in the extended convoy. However, the significance of the derived probabilities varies with the nature of the social support. For instance, since providing sick care is labor intensive and requires money, membership in the pre-family convoy had a significant negative effect on providing such support to parents and had a positive effect on receiving it from their parents, as compared with the extended convoy. Since the exchanges of support for household chores requires less labor and money, fewer differences were observed for upward exchanges, although the pre-family convoy received significantly more in this form of support than the extended convoy, presumably because of a relative lack of resources. Since affective support such as exchanges in advice on important issues requires experience rather than instrumental resources, the mature convoy was found to receive significantly less advice from parents than the extended convoy. On the other hand, providing regular allowances was prescribed by social norm. In principle, we assumed that there was no significant difference. Empirically, we found that latent classes have no significant effect on the exchange of regular allowances. Despite these results, Table 6 shows that the pre-family convoy was less likely to provide and more likely to receive a regular allowance. Finally, it was probable that most of the exchanges in irregular allowances constituted small amounts of money to express love or supplements to a regular allowance. The differences in the level of this type of support among the four latent convoys were, however, insignificant.

The effect of socioeconomic status (SES) variables varies with the nature of support. In regards to the influence of age, the two younger groups were associated with a significantly reduced likelihood of providing sick care support

Table 6. Logit Regressions on Support Exchanges with Parents (n = 1,350)

	Provided	Sick care	Received		Provided	House-hold chores	Received		Provided	Advice	Received		Provided	Regular allow-ances	Received		Provided	Irregular allow-ances	Received	
Parameter	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*
Intercept	0.93	.56	−3.41***	.73	−0.05	.49	−2.61***	.74	−0.81	.55	−1.41*	.57	−1.60**	.58	−7.78	16.81	−1.01*	.48	−6.76**	6.41
Latent class																				
Pre-family convoy	−0.69**	.26	0.76**	.25	0.07	.25	0.62*	.25	−0.22	.27	0.40	.27	−0.33	.26	0.61	0.48	−0.09	.23	0.48	0.31
Pro-social convoy	−0.23	.27	0.47	.26	0.39	.25	−0.18	.27	0.20	.30	−0.30	.28	−0.07	.28	−0.57	0.66	0.32	.24	−0.78	0.44
Mature convoy	−0.16	.17	−0.16	.17	0.06	.16	−0.11	.17	0.12	.18	−0.38*	.17	−0.07	.17	−0.89	0.46	0.17	.15	−0.08	0.25
Sex (male)	0.43**	.13	−0.04	.14	−0.16	.13	0.12	.14	−0.02	.15	−0.03	.15	0.74***	.14	0.46	0.26	−0.08	.12	−0.05	0.18
Age																				
Younger than 30	−1.71**	.51	2.41***	.67	−0.62	.45	2.45***	.69	−0.17	.49	1.65**	.51	−0.50	.53	6.64	16.80	−0.52	.43	5.88	6.40
30 to 59	−1.13*	.47	1.66**	.65	−0.63	.40	1.65*	.66	0.46	.44	0.82	.47	−0.10	.49	5.33	16.80	0.18	.39	4.62	6.39
Education																				
Primary	0.04	.26	−0.53	.28	−0.07	.26	−0.97**	.29	−0.58*	.29	−0.38	.28	−0.51	.28	−1.32	0.69	0.06	.24	−0.74	0.38
Junior high	−0.05	.25	−0.32	.26	−0.02	.24	−0.19	.26	−0.27	.28	−0.53*	.26	−0.24	.26	−1.89**	0.60	0.33	.23	−1.09**	0.36
Senior high	0.12	.21	−0.22	.21	0.14	.20	−0.08	.21	−0.24	.23	−0.13	.22	0.12	.20	−1.20***	0.34	0.06	.19	−0.45	0.24
Associate	0.07	.22	−0.08	.22	0.08	.22	0.31	.26	−0.33	.25	0.15	.24	0.43*	.21	−1.03**	0.35	0.22	.20	−0.30	0.25
Income																				
30,000 to 100,000	0.30	.18	−0.31	.19	0.39*	.18	−0.32	.20	0.34	.19	−0.58**	.20	0.44*	.21	−.64	0.38	0.41*	.16	−0.68**	0.25
100,000+	0.33	.23	−0.28	.24	0.39	.22	−0.06	.24	0.44	.24	−0.53*	.25	0.76**	.24	−1.02*	0.43	0.42*	.20	−0.71*	0.29

(continued)

Table 6. (continued)

	Provided	Sick care	Received		Provided	House-hold chores	Received		Provided	Advice	Received		Provided	Regular allow-ances	Received		Provided	Irregular allow-ances	Received	
Parameter	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*
Urban	0.04	.14	0.02	.15	−0.01	.14	0.04	.15	−0.04	.16	−0.08	.15	0.38**	.14	0.63*	0.27	−0.17	.13	0.35	0.19
Ethnicity																				
Hakka	−0.35	.21	−0.79**	.25	0.09	.21	−0.11	.23	−0.20	.23	0.25	.23	−0.20	.24	−0.32	0.49	0.21	.20	0.28	0.29
Mainlander	−0.26	.21	0.08	.22	−0.33	.21	−0.44	.22	0.15	.24	−0.24	.22	−0.02	.21	−0.65	0.52	0.47*	.20	0.29	0.28
Other	0.79	.52	0.41	.43	0.09	.44	−0.35	.45	−0.27	.46	−0.19	.45	−0.23	.53	−6.00	17.30	0.78	.42	0.20	0.59
Father's residence	−0.37*	.14	−0.16	.15	−0.37**	.14	−0.28	.15	−0.27	.16	0.31*	.15	−0.35*	.15	0.31	0.39	0.13	.13	−0.01	0.22
Mother's residence	−0.19	.16	−0.24	.17	−0.37*	.16	−0.63***	.17	0.19	.17	−0.03	.17	−0.15	.17	−0.54	0.43	0.17	.15	−0.02	0.25
R Sick care	1.69***	.18			0.27	.16			0.23	.18			0.48**	.14			−0.33*	.15		
R Chores	0.11	.17			1.21***	.16			0.05	.18			−0.09	.17			0.27	.15		
R Advice	0.57***	.14			0.45**	.13			2.15***	.15			−0.08	.15			0.44**	.13		
R Allow 1	−0.56	.29			−0.09	.30			0.01	.32			0.47	.27			−0.28	.26		
R Allow 2	−0.10	.21			0.13	.21			0.11	.23			−0.49*	.21			0.39*	.18		
R Child care	0.48**	.17			0.81***	.16			0.30	.18			0.40*	.16			0.15	.15		
P Sick care			1.68***	.18			0.45**	.16			0.34*	.16			−0.23	0.31			0.23	0.21
P Chores			0.57***	.15			1.41***	.15			0.27	.15			0.34	0.31			0.53**	0.20
P Advice			0.42**	.16			0.15	.16			2.10***	.15			0.41	0.32			0.29	0.21
P Allow 1			−0.01	.15			−0.09	.16			−0.22	.16			0.63*	0.28			−0.34	0.20
P Allow 2			−0.36**	.14			0.08	.14			0.18	.14			−0.12	0.27			0.26	0.18
Likelihood ratio χ^2	255.95		382.56		276.59		455.15		308.95		370.71		143.69		177.05		95.12		167.74	
p	.000		.000		.000		.000		.000		.000		.000		.000		.000		.000	
Cox and Snell R^2	.173		.247		.185		.286		.205		.240		.101		.123		.068		.117	

Note: R indicates support received from parents. P indicates support provided to parents. Allow 1 refers to monthly allowances. Allow 2 refers to irregular allowances.
*Indicates significance at the .05 level. **Indicates significance at the .01 level. ***Indicates significance at the .001 level.

to their parents, with a significantly increased likelihood of receiving it. These groups generally received more support in the form of household chores and advice from their parents also.[3] The effects of gender were somewhat mixed. Traditionally, males have been the breadwinners and females have been the care providers of the family. Our findings showed that males more regularly exchanged allowances with their parents. Additionally, males were more inclined than females to provide sick care support for their parents. This was similar to L. Y. Chang's (2001) finding that male adult children fulfilled multiple support roles when their parents were hospitalized.

In principle, the SES variables serve as indicators of a person's social structural resources. Respondents who were younger, less educated, and in lower income groups had fewer resources. They were thus less likely to provide support to their parents and more inclined to receive support from their parents. Education had surprisingly negative effects on support exchanges. Compared to the better educated, the less educated were less likely to receive support in household chores, advice, and regular and irregular allowances, while being less likely to provide support in the form of advice. From the perspective of intergenerational social mobility, it is possible that parents of the less educated were also relatively lacking in resources, so they were less able to provide advice and regular financial support to their offspring. Nevertheless, the aforementioned principle worked for each type of support, with the exception of education.

The effects of contextual variables were mostly unexpected. The governing assumption had been that fathers who lived near their children would exchange more support with them. However, the effects of living close to the fathers' residence were mostly negative, except for a positive effect on receiving advice; namely, those whose fathers lived farther away provided more support. Such effects were significant in terms of providing instrumental support and a regular allowance. Those whose mothers lived nearby exchanged less support in household chores. In addition, Mainlander respondents provided more irregular allowance to their parents while Hakka respondents received less sick care support from them than the Minnan.

A summary of the regression results regarding exchange strategies is described as follows:

1. Multiple exchange strategies were used between generations in Taiwanese families. In Table 4 we found that the latent convoy classes were associated with more than one type of support exchanged, implying that each respondent played several roles in exchanging support with his or her parents. This is apparent from

the results of Table 6. We have found that the exchange of each task was significantly affected by several tasks in the opposite direction. For example, receiving sick care support from parents was significantly affected by sick care, household chores, advice, and irregular allowance support provided to parents.

2. Different strategies were applied to different tasks. The equity rule was applicable to instrumental and affective types of support. As shown in Table 6, the provision of a certain type of support was returned with the same type of support. For instance, respondents who provided sick care to parents were more likely to receive this type of support in return. In addition, child care, downward unidirectional support type, had significantly positive effects on all aspects of support provided, although the effects on advice and irregular allowances were insignificant.
3. In addition to the equity rule, the rule of substitution was found in financial support. For example, it was noted that receiving irregular allowances had a significantly negative correlation with providing regular allowances to parents. In other words, children who received less irregular allowances from their parents had a worse economic status, and therefore may not have felt obliged to give regular allowances.

Summary and Discussion

In this study, an HbC has been proposed as a concept for the study of intergenerational support networks and exchange. In principle, it is a four-circle network that is arranged on the basis of kinship distance and is focused on the exchange behavior between the focal person of a household and his or her convoy members. It has a household as its base and places these members in the innermost circle. Non-coresiding family members, relatives, and friends with whom the respondents have frequent contact are sequentially included within the second to fourth circles.

Two approaches have previously been employed in examining n HbC in the analysis of intergenerational support exchanges. First, we may regard the four circles as dummy independent variables. The first two circles indicate the existence of a modified extended family (Hoyert 1991; Litwak 1960), while the last two denote the possibility of immediate family members' support functions being replaced by relatives and friends (Chen and Lin 2008). The second approach is to investigate whether the completeness of an HbC may affect intergenerational support exchanges (Chen 2006a). In this study,

a third approach is proposed to examine whether there is a latent convoy structure underlying all possible convoy subtypes and whether the latent classes derived from the structure reflect family life course stages with differential intergenerational support functions. Empirically, four latent classes have been derived from latent class analysis and are referred to as the pre-family convoy, pro-social convoy, mature convoy, and extended convoy. They correspond to family life-course stages in view of differences regarding household types and support functions.

Two points of discussion regarding the aforementioned findings are presented next.

A Reflection on Family Structure

In response to industrialization and urbanization in Taiwan as well as in other developed countries, changes in the form and functions of families seem to be inevitable. Yet the fundamental reasons for stages of changes may vary between countries. The United States serves as a prime example of a country that has experienced a series of changes in family structure and functions. Four hypotheses have been proposed to describe the changes in the American family (Bengtson 2001). The first is concerned with the emergence of the modern nuclear family following industrialization. The second has to do with the decline of the modern nuclear family as an institution because of a high divorce rate, while the third hypothesis is concerned with heterogeneity among family forms, thereby implying a trend of extending family relationships beyond biological or conjugal relationship boundaries. The fourth and final hypothesis extends from the third and stresses the importance of multigenerational bonds, placing greater emphasis on the need for grandparents to support and nurture the social development of their grandchildren.

In contrast to America, Taiwan has experienced relatively few transitions in family structure. Its current status is close to the second hypothesis, with the model family structure having changed from extended to nuclear and only a slight increase in the divorce rate. Since the 1960s and 1970s, many extended patriarchal families have broken down into several nuclear families. The percentage of extended families has also declined steadily from 66% in 1965 to approximately 36% in 2001 (Chen and Liu 2002; Weinstein et al. 1994). The proportion of nuclear families has concomitantly increased from 35% in 1965 to 64% in 2001. In addition to the aforementioned changes, greater numbers of young people are living separately from their parents as part of their search for educational and economic opportunities (Yang and Chen 2002). This contrasts with traditional practices where young couples stayed with

their parents at the beginning of family formation (Freedman, Thorton, and Lin 1994). The coexistence of various forms of families and changes in relationships with relatives and friends has led to various subtypes of HbC.

Although the present investigation was conducted in and used data from Taiwan, such findings and their implications are applicable to countries that have experienced a similar transformation in family structures. There was the likelihood of classifying subtypes of convoy based on household types and the availability of social networks. One can also expect to find an underlying structure that may be used to reflect differential intergenerational support functions.

Theoretical and Methodological Implications of the Empirical Findings

Previous studies suggested that family life-course stages correlate very modestly with many other measures of individual and family attributes (e.g., family life elements), partly because of the extent of heterogeneity within various stages (Mattessich and Hill 1987). In this study, household types and family, kinship, and friendship networks were used to derive a latent structure with four types of convoy structures that correspond to four family life stages. Furthermore, a nonlinear relationship was found between intergenerational support exchanges with the four types of support structures. Respondents from the pre-family convoy were found to be in the earliest family life-course stages, and those from the pro-social convoy were in the similar or subsequent life stages, but subject to relatively disadvantaged statuses. Both groups could be characterized as lacking resources in terms of the available support networks. Consequently, they provided significantly less support to parents while deriving more support from others. By contrast, members of mature convoys were in the later family life-course stages, and were thus equipped with more abundant network resources. As a result, they were able to provide more support to their parents while receiving less support from them. Members of the extended convoy were characterized by the latest family life-course stage, and therefore had relatively fewer resources and made relatively fewer intergenerational support exchanges than mature convoy members.

The aforementioned findings indicate that an HbC is an empirically feasible concept for the study of intergenerational support exchanges because it is essentially a composite of several support networks. These networks vary with the progression through life-course stages and their availability can be easily identified. The combination of available networks forms convoy

subtypes that were processed with LCA in this study. On the other hand, the empirical findings of this study might contribute to family studies in several respects. First, they reveal a typology that corresponds to the family life-course stages by using a latent structure approach. Such an approach has been used to reveal the complex role configurations and the paths of individuals through different stages of the life course (Macmillan and Eliason 2003). The four convoy classes reflect the abridged phases of the family life course proposed by Rollings and Feldman (1970) while incorporating social networks that have been maintained rather than being merely available. In other words, social networks that were used to construct an HbC may be viewed as a core network in spite of their nature, and can thus be mobilized when needed (Marsden 1987).

The findings of this study were also consistent with Fei's (1992) assertion that the immediate family is the source of the most important relationships within Chinese societies. Most members of mature and extended convoys fulfilled the definition of a modified extended family. Equipped with more network resources, they are able to provide more support to their parents but tend to receive less support from them. It is noted that when traditional extended families are spatially separated, the rules and content of exchanges are modified (Hwang 1987; Lee et al. 1994; Shi 1993; Silverstein et al. 2002). The equity rule, which emphasizes the notion of reciprocating means, prevails as opposed to the traditional rule of need. Multiple exchange strategies are applied to meet the requests for certain types of support. Although more empirical evidence is needed, the equity rule may be shown to be more prevalent than the rule of need in contemporary Taiwanese families. Finally, the findings also confirmed that immediate living kin tend to be the most important part of the support network (Peek and Lin 1999).

Our research findings reiterated Hogan and Eggebeen's (1995) claim regarding the necessity to factor into consideration the completeness of the three concentric circles in Kahn and Antonucci's (1981) convoy structure. Unlike the assertion of Kahn and Antonucci (1981), we have found that Taiwanese households may omit one of the inner or outer circles as the focal person moves along the life course. Some may have only one or two circles, which will consequently influence the amount of support exchanges they engage in. The findings of another recent study also indicated that the lack of both social and kinship networks did not result in significantly less support provided to parents, compared to respondents with four full circles (Chen 2006b). Still, we acknowledge that Kahn and Antonucci's (1981) three concentric circles represent an ideal structure. Given that the issue of the convoy household model has not been fully examined in other societies, further empirical studies are needed to ratify the extent of its potential applicability.

Appendix. Descriptive of Regression Variables (n = 1,350)

Parameter	%/Mean
Latent class	
Pre-family convoy	0.18
Pro-social convoy	0.10
Mature convoy	0.40
Extended convoy	0.32
Sex (male)	
Male	0.51
Female	0.49
Age	37.65
Younger than 30	0.23
30 to 59	0.75
60 or older	0.02
Education	
Primary	0.16
Junior high	0.16
Senior high	0.34
Associate	0.18
College or more	0.17
Income	
$29,999	0.18
$30,000 to $99,999	0.57
$100,000 and more	0.25
Marital status	
Married or living with a partner	0.70
Single/divorced/widowed	0.30
Residence	
Urban	0.33
Rural	0.67
Ethnicity	

(continued)

Appendix. (continued)

Parameter	%/Mean
Minnan	0.77
Hakka	0.10
Mainlander	0.11
Other	0.02
Father's residence	
Urban	0.47
Rural	0.53
Mother's residence	
Urban	0.59
Rural	0.41
R Sick care	0.37
R Chores	0.43
R Advice	0.66
R Allow 1	0.06
R Allow 2	0.15
R Child care	0.25
P Sick care	0.64
P Chores	0.58
P Advice	0.71
P Allow 1	0.27
P Allow 2	0.52

Note: R indicates support received from parents. P indicates support provided to parents. Allow 1 indicates monthly allowance. Allow 2 indicates irregular allowance.

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Notes

1. Given the moderate proportion of married respondents in our sample (43.4%), this trend may reflect the cultural practice of married Taiwanese to give irregular monetary allowances on special occasions such as Chinese New Year.
2. The US dollar/NT dollar exchange rate was about 1:34.5 at the time of the survey.
3. The positive effect of those between the ages of 30 and 59 years was significant at the 0.10 level.

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Bios

Chaonan Chen is a professor of health care administration at Asia University and an adjunct research fellow of the Institute of Economics, Academia Sinica. He served as the president of the Taiwan Population Association from 2000 to 2002 and as a member of the editorial board of the *Journal of Population Studies* beginning in 1990. His publications include three books, two conference proceedings, and many articles on Taiwan's family planning, population aging, and intergenerational support exchanges.

Pei-shan Liao is an assistant research fellow at the Research Center for Humanities and Social Sciences, Academia Sinica. Her specialty is in research methods, and she has written publications on questionnaire design, sampling design, and quality of life.

Hui-lin Lin is a professor of economics at National Taiwan University, where she has served as deputy dean of the College of Social Sciences since August 2008. Her publications include three textbooks on statistics, one textbook on microeconomics, and many articles on empirical economics.