This series of research reports deals with the status of the elderly in several Asian countries. It presents research that is being conducted under a broad project sponsored by the U.S. National Institute on Aging, the Comparative Study of the Elderly in Four Asian Countries (Grant No. AGO7637). The goal is to measure the social, economic and health characteristics of the older population (age 60 and above), to predict what changes may occur over the next decades, and to suggest implications for public policy. The original countries involved in the study are the Philippines, Singapore, Taiwan and Thailand. Reports on the elderly in other countries in Asia and on methods developed through the project using data from various countries may also be included in this report series.

Organizations collaborating in this research include: Population Studies and Training Center, Brown University; Population Institute, University of the Philippines; Department of Social Work and Psychology, National University of Singapore; Taiwan Provincial Institute of Family Planning; and Institute of Population Studies, Chulalongkorn University. For additional information about the comparative project, please contact the Principal Investigator: Albert I. Hermalin, Population Studies Center, University of Michigan, 1225 South University Avenue, Ann Arbor, Michigan 48104-2590.
Abstract: The living arrangements of the elderly and the degree of contact and support exchanged with children can be studied from one of two perspectives—either that of the older parent(s) or that of one or more children. This paper makes use of two surveys in Taiwan to examine how well these perspectives coincide. The 1986 Knowledge, Attitudes, and Practice (KAP) Fertility Survey included detailed questions on family arrangements and fertility practices among couples of reproductive age, while the 1989 Survey of Health and Living Status of the Elderly asked a representative sample of persons age 60 and over questions about living arrangements, support, and contacts. The frequency of coresidence, visits, and financial contributions is compared as reported by parents and children. In addition, indirect estimates of the children’s frequencies, which take into account the shifting denominators and the nature of the transaction, are derived. The results show fairly high levels of agreement on reports of coresidence but lower levels on visits and financial support, for the models used. Possible reasons for the lack of alignment are discussed.
The living arrangements of the elderly and the degree of contact with and support received from children are topics which have received a great deal of attention among researchers, as these factors are thought to play a substantial role in the well-being of the elderly. Because they involve multiple individuals, these phenomena may be studied from various perspectives -- that of the older parent or parents or that of one or more children.

These perspectives may be quite distinct, reflecting either a difference in the unit of measurement or differences in the way in which contact and support are interpreted and/or reported by the various individuals involved. With respect to the measurement issue, there will be a certain level of disparity in the proportion of parents and children reporting particular outcomes, due solely to a shift in denominators. As example, a high percentage of parents can live near one or more children, however, if families are large, this might translate into a much smaller percentage of children living near parents. Likewise, each child may report having infrequent contact with parents, however, the sum of infrequent contacts across all children may translate into frequent contact with at least one child for the parent. Given basic information on the proportion of persons in each generation who are "at risk" of the outcome being studied and the propensity of either parent or child for having the outcome, measurement differences of this sort can be estimated using principles of formal demography, as discussed by Vicki Freedman and colleagues (1991).

Disparities in perspective may also arise as a result of differences in knowledge or awareness of the phenomenon being reported on, or in the manner in which it is interpreted or reported. For example, the value of an exchange may be different for the individuals involved in the exchange -- what may be perceived as a large sacrifice on the part of the giver may be perceived as having little value or importance on the part of the recipient, and vice versa. Norms may also play a role with respect to influencing interpretations and/or reporting behavior. An elderly Chinese father may be quite aware that he is receiving little or no financial support from his sons; however, he may be reluctant to acknowledge this because of the high value placed on filial piety and family support in old age. To this point, little is known about the degree to which information obtained from parents and children correspond on measures of contact and support, particularly in developing and newly industrialized countries.

Data

This paper makes use of two recent surveys in Taiwan in order to compare patterns of parent-child coresidence, contact, and exchanges of support observed in each survey. The 1985-86 Taiwan Knowledge, Attitudes and Practice (KAP) Fertility Survey provides a detailed study of family arrangements and fertility practices among couples of reproductive age. The sample for the KAP survey included 4,312 ever-married women between the ages of 20 and 49. Of most relevance to this study, subjects were asked a number of questions about their own parents and those of their spouse (if currently married), including the parents’ living status and proximity, frequency of contact with the respondent couple, and the regularity and purpose of financial transfers that may have been made by the respondent couple to the parents or parents-in-law. Data were also obtained on the number of living siblings (married and unmarried, brothers and sisters) each partner in the respondent couple had and where the siblings lived in relation to the couple’s parent(s).

A second set of data come from the 1989 Survey of the Health and Living Status of the Elderly in Taiwan, which asked a representative sample of men and women 60 years of age and over detailed questions about living arrangements, location of children, contact with and various forms of support received from each child and others.

Using two surveys to compare perspectives gives rise to some methodological problems, since the sample from one survey does not necessarily correspond with the comparison group from the
other. At a general level, this is most obvious in the case of older people who have no children (or surviving children). Their characteristics cannot be reflected in the reports from children. It may also be necessary to adjust for age spans and other characteristics. In the case of the two surveys to be used here, the following adjustments were made to each survey to bring about close alignment:

- From the KAP survey, only respondents whose husbands had one or more parents alive and age 60 or over were selected. This simulated couples whose older parents who could have fallen into the elderly survey.

- From the survey of the elderly, only respondents who had one or more married sons between the ages of 25 and 54 were selected. This simulated older parents whose children could have fallen into the KAP sample (as husbands of the respondents).

Beyond these rather straightforward adjustments, one must be attentive to differences in question wording that measure the behaviors under investigation. As example, one survey may define temporary residents as household members, while another restricts the definition to permanent residents. Furthermore, in many developing countries, families often live in adjoining dwellings or compounds. In some cases they may eat together, but live separately, and this may add another dimension of ambiguity in the definition of coresidence. [See Weinstein et al. (1990) for difference in trends in coresidence in Taiwan based on the associative definition (eat and/or live) versus the more restrictive economic definition (eat and live)].

Other aspects of behavior may also differ across surveys. As example, questions on financial support may differ with respect to the implied regularity of transfers, their purpose and/or what is considered to be a significant amount for purposes of reporting. In addition, questions on contact with non-coresident kin and non-kin may differ with respect to the measurement of frequency, mode of contact (personal visit vs. phone vs. mail), and the implied direction (whether include visits/calls from parent to child, child to parent, or both). The two surveys used in this analysis contain some differences in question content and wording, which will be discussed along with the results for each topic. These differences notwithstanding, the two surveys do share a high degree of similarity with respect to the content of several key questions, and these will form the bases of the analysis. In the next section we discuss the methods to be employed and distinguish the analyses to be presented from other efforts of this type.
Methodological Issues

It is useful at the outset to distinguish among the different measurements and perspectives that can arise in moving across generations. A good start in this direction was made by Freedman, et al. (1991) and we follow their classification and terminology in part, supplementing as necessary. The figure below sets out the various options:

**Figure 1**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Source of Direct Measure</th>
<th>Source of Indirect Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARENTAL TRAIT</td>
<td>PARENT</td>
<td>CHILDREN</td>
</tr>
<tr>
<td>TRANSFER or EXCHANGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only one child involved(^a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is child involved</td>
<td>CHILDREN</td>
<td>PARENT</td>
</tr>
<tr>
<td>Is parent involved</td>
<td>PARENT</td>
<td>CHILDREN</td>
</tr>
<tr>
<td>Multiple children involved(^b)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is child involved</td>
<td>CHILDREN</td>
<td>PARENT</td>
</tr>
<tr>
<td>Is parent involved</td>
<td>PARENT</td>
<td>CHILDREN</td>
</tr>
</tbody>
</table>

\(^a\) As examples, primary caregiver and, very often, coresidence  
\(^b\) As examples, visits, financial assistance, gifts

The table distinguishes among three types of information that might be collected or inferred and the sources involved. For example, one might seek to know whether a parent is disabled or in poverty, and this could be obtained directly through a survey of parents or inferentially by asking children about their parents. Similarly, one might seek to examine behaviors that involve both generations and again the information may be obtained directly from the generation involved or indirectly about that generation from the reports of the other generation. The mathematics and assumptions required to derive the indirect measures vary depending upon the type of measure under consideration. The calculations that were used for the current study are described more formally in the appendix and are also alluded to throughout the paper as the measures are used or discussed.
The table further suggests that when two surveys are available there can be multiple estimates of the same behavior. Consider, as example, coresidence of a parent (or parents) with one of their children. In our case we can:

- measure directly the proportion of married sons coresiding with a parent (conditioned and unconditioned on having a living parent), from reports of sons;
- measure directly the proportion of elderly coresiding with a married son (conditioned and unconditioned on having a married son), from reports of the elderly;
- calculate an indirect measure of the proportion of married sons (with living parents) who are coresiding with a parent from reports of the elderly on their own living arrangements, and information on the number of married sons they have; and
- calculate an indirect measure of the proportion of the elderly (with living children) who are coresiding with a married son from reports of children on their parents’ living arrangements, and information on the number of married brothers they have.

In this paper we will focus primarily on the two direct measures and the indirect estimate of children’s behavior based on reports from the elderly survey subjects. Indirect estimates of parental behavior are possible from the data collected in the KAP survey in some cases, but are not pursued here in the interest of time, as they are somewhat more complex.

The data presented here go somewhat beyond those presented by Freedman et al. (1991) in several respects: first, they contrast direct estimates from two distinct surveys. The article by Freedman and colleagues relies mainly on direct versus indirect measures, or contrasts estimates across generations from the same survey, such as the National Survey of Families and Households. As interest in the behavior and status of the elderly grows, it is important to determine the ability of surveys that were not primarily designed to study aging to generate useful measures. Secondly, in contrast to the Freedman et al. study, which tended to focus on a single parent-child dyad, the current study provides more explicit measures and estimates of behaviors that can involve more than one child, such as contacts and financial exchanges, and presents most of the data by family size. Lastly, the focus of this paper is on a recently industrialized country with a strong Confucian tradition and, as a result, the general magnitude of the behaviors at issue are quite different from those observed in the study by Freedman and colleagues, which was based on surveys in the United States.

The remainder of the paper is organized as follows. In the next section we present general trends in levels of coresidence from the parental and children’s viewpoint to set the stage. This is followed by a closer examination of coresidence from the two surveys and their degree of implied agreement. The final two parts of the analysis focus on behaviors that can involve multiple children by comparing the frequency of visits across perspectives and reports of financial support provided to (received by) parents as reported by the older and younger generations. The overall implications of these contrasts concludes the paper.

**Overall Trends in Coresidence**

By way of background, the first two tables highlight trends in living arrangements since the mid-1970s, from the perspective of the elderly (in Table 1) and that of adult children (in Table 2). The
data for the first six time periods in Table 1 come from repeated cross-sectional survey known as the Survey of Income and Expenditures; data in the last column come from the 1989 Taiwan Elderly Survey described above (table reproduced from Hermalin et al., 1996).

These data show that, although even in 1985 a fairly high proportion of the elderly live with a married child, there was a trend away from co-residence with a married child during the period covered by the survey, from 67 percent in 1976 to 55 percent in 1985. We note that the vast majority of those living with a married child are living with a married son, and this is a reflection of the strong patrilineal tradition in Taiwan. We do not know the breakdowns by sex of child for the earlier years, but of the 56.6 percent co-residing with a married child in 1989, only 5 percent were co-residing with a married daughter and the remainder with a married son.

At the same time that co-residence with married children declined, co-residence with unmarried children increased some through 1985. This is probably the result of an increase in the age at marriage during this period, which has had the effect of postponing the initial departure of children from the home. Although the different trends in co-residence with married and unmarried children offset one another to some extent so that the decline in the proportion co-residing with any child was fairly small, there was a non-trivial increase in the proportion of elderly living alone or with a spouse only.

These findings have been supported by findings from the KAP fertility surveys that were conducted in Taiwan over roughly the same time period (see Weinstein et al., 1990). Table 2 provides the percentage distribution for proximity of the respondent couple to the husband’s parents—whether sharing a household, living in the same city or township, or living elsewhere. As shown in this table the percentage of respondent couples who lived with the husband’s parents declined from 58 percent in 1973 to 44 percent in 1986.

Tables 1 and 2 are not directly comparable because of the difference in perspective (parents vs. children) as well as sources of data and definitions. They both indicate continuing high levels of co-residence but both point to a decreasing level over the 1970’s and 80’s.

Contrasts in Co-residence

Tables 3 and 4 initiate the formal analysis of co-residence from the standpoint of each survey. Table 3 utilizes the survey of the elderly to show the proportion co-residing with a married son by number of married sons between the ages of 25 and 54. As noted above, the sample is restricted here to the elderly who have one or more married sons in that age range to make it comparable to those covered by the KAP survey. Overall the proportion co-residing is 57 percent and, as expected, the probability of co-residing tends to increase with the number of married sons, but it is over 50 percent even for those with one married son. The table also reports that this group of elderly had an average of 2.22 married sons, pointing up that options for co-residence are not high even for this high fertility cohort, if co-residence is restricted to married sons.

The direct measures of parental co-residence given in Table 3 are contrasted with the direct measures of co-residence from the child’s perspective, which are presented in Table 4. This table presents several measures of co-residence corresponding with narrow and broad definitions of who is included as household members, and provides a breakdown for whether the respondent’s husband’s parents are living with either the respondent couple or a married brother versus not living with any married sons (based on the broad definition of co-residence).

First, focusing only on the behavior of the respondent and her husband, the figures in column 3 (narrow definition) represent the proportion of respondent couples who are living with the husband’s parents on a permanent basis, whereas the figures in column 4 also include subjects who
report that the husband’s parents rotate living among children (including the respondent couple) and were, thus, either temporarily present or temporarily absent from the subject’s household at the time of the survey. It is interesting to note that the difference in proportions coresident based on these distinct definitions increases as family size increases. As expected, the proportion of children reporting coresidence for either measure is less than the proportion of parent’s reporting coresidence in Table 3, reflecting the shift in unit of analysis, as noted above.

How do we test whether the two perspectives are in accord? As described by Freedman et al. (1991) the indirect estimate of the proportion of children coresiding is calculated by dividing the total proportion of older parents who are coresiding with a married son by the average number of married sons (see appendix for a more detailed specification of the calculations). This yields the following:

\[
\text{proportion of parents coresiding} \div \text{average \# married sons} = \frac{0.57}{2.22} = 0.26
\]

This estimate is somewhat lower than the narrow definition shown for children in Table 4 (.31), but given the level of change in coresidence that may have occurred over the four years that separate the two surveys (as implied by the decline in the proportion coresident between 1980 and 1985/86), the estimate appears to be in close alignment. The indirect estimate is, however, considerably below the broader definition of coresidence (.40), suggesting that the two surveys may not be capturing the same dimensions of coresidence.

Another possible reason why the two estimates do not coincide is that the assumption that an elderly parent lives with only one married son does not hold precisely. In our survey of the elderly, seven percent lived with two married sons and over one percent lived with three or more. As developed in the Appendix, the formula relating the two surveys can be adjusted for coresidence with two or more sons by multiplying the number of married sons coresiding by the corresponding proportion of parents. In sum,

\[
\hat{R} = \left[ Q_1 + 2Q_2 + \ldots + iQ_i \right] \div \overline{C}
\]

where \( \hat{R} \) is the estimate of the proportion of sons reporting coresidence, \( Q_i \) is the proportion of parents reporting residence with \( i \) sons, and \( \overline{C} \) is the average number of married sons. In our case this yields:

\[
[0.500(1) + 0.074(2) + 0.010(3) + 0.004(4)] \div 2.22 = 0.31
\]

Thus the adjustment for the small proportion of parents who coreside with more than one married son produces an estimate for the proportion of married sons that coincides precisely with the reported proportion from the KAP survey according to the narrow definition of coresidence. This strengthens the over-all correspondence, but still leaves the effects of changes over time and broad vs. narrow definition of coresidence unresolved.

It is also possible to compare the estimates from each source by family size by dividing the proportions of parents coresiding as given in Table 3 by the number of married sons and contrasting these estimates with the comparable family sizes from Table 4. These comparisons are given below and confirm that the indirect estimates generally parallel the direct estimates for children, but at a lower level, which may be due in part to changes over time, but may also be due to other factors in the
structure of the questions or definitions of coresidence. The wider gaps with the broader definitions of coresidence suggest that aspects of questionnaire content need to be investigated, as well.

<table>
<thead>
<tr>
<th>Family size</th>
<th>Proportion of parents coresiding</th>
<th>Proportion of children coresiding&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Direct</td>
</tr>
<tr>
<td>1</td>
<td>0.52</td>
<td>0.52</td>
</tr>
<tr>
<td>2</td>
<td>0.58</td>
<td>0.29</td>
</tr>
<tr>
<td>3</td>
<td>0.58</td>
<td>0.19</td>
</tr>
<tr>
<td>4</td>
<td>0.67</td>
<td>0.17</td>
</tr>
<tr>
<td>5</td>
<td>0.68</td>
<td>0.14</td>
</tr>
<tr>
<td>6</td>
<td>0.63</td>
<td>0.11</td>
</tr>
</tbody>
</table>

<sup>a</sup>Based on narrow definition of coresidence; <sup>b</sup>obtained by dividing column 2 by column 1.

Column 5 of Table 4 presents another definition of coresidence, derived by asking respondents whether their parents-in-law were residing with a married brother of her husband, if they were not coresiding with the respondent couple. It is worth noting that this becomes, in effect, a measure of a parent trait as defined in Figure 1, in that it seeks to determine whether the parent is in one status or another, without identifying the behavior of a specific child. As such, the overall total reported (68 percent) is unbiased only if the propensity to coreside does not vary by family size. Since this is not the case, the proportions in each family size category should be weighted by the family size distribution from the parental perspective (rather than from the child’s perspective, which the reported average implicitly does). [See Appendix for derivation.] With this adjustment, the overall average becomes 63 percent, closer to the average reported in Table 3 (57 percent), and apparently in line with the declining trend in coresidence.

These data on coresidence are reassuring in part about the ability to derive comparable estimates from independent surveys, yet leave unanswered questions. Compared to the estimate based on the narrow definition of coresidence with the respondent couple and that based on all married sibs, the indirect measures derived from the elderly survey are quite in line with the direct estimates derived from data reported in the KAP survey some four years earlier. However, the broader definition of coresidence that can be derived from the KAP data do not fall as neatly into line, and the reasons for this merit further attention.

**Visits with Children**

We now turn to another transfer of importance between children and parents, namely contact with children, and in doing so shift from a transfer which typically involves only one married son (coresidence) to one that can and often does involve multiple children. Children in Taiwan who are not living with their parents often live fairly close by, facilitating frequent contact. Both the elderly
survey and the KAP survey collected information on the frequency of contact between parents and children for various modes. The measure most comparable across surveys (and the one pursued in this part of the analysis) is the proportion of parents engaging in daily visits with a non-coresident married son, including visits made by married sons to parents, as well as those made by parents to married sons. As with the case of coresidence, we begin by presenting the direct estimates of the proportion with daily visits with a married son from the parental perspective, and then examine direct estimates from the perspective of a married son and compare them to indirect estimates based on data from the elderly survey.

The direct estimates of the proportion of elderly parents with daily visits (and without daily visits) with a non-coresident married son based on data from the elderly survey are presented in Table 5. In total, 28 percent of the elderly have daily visits with one or more non-coresident married sons (column 3). As observed for coresidence, the percentage experiencing daily visits also increases as the number of non-coresident married sons increases, from 20 percent among subjects with one married son outside the household, to a high of 61 percent among those with 6 non-coresident married sons.

Table 6 presents the direct estimates for the proportion of non-coresident married sons (subject’s husbands) who see their parents on a daily basis (column 3), based on data from the KAP survey. The proportion ranges from 0.24 among respondent couples for whom the husband has one married brother (i.e., two married sons in the family) to 0.32 among those with four married brothers. Although there is no consistent pattern according to number of married sons, the proportion with daily visits does appear to increase slightly as the number of married sons increases.

Indirect estimates for the proportion of non-coresident married sons with daily visits with parents based on the elderly survey are presented in the last column of the table. These estimates were derived using the following calculation:

\[ 1 - \frac{n}{\sqrt{Q}} \]

where \( n \) is the number of married sons and \( Q \) is the proportion of elderly parents not exchanging daily visits with a married son. Again, this relationship and the assumptions underlying it are described more formally in the appendix.

A comparison of the direct proportions given in column 3 and the indirect proportions in column 4 of Table 6 suggest that the correspondence across surveys is much lower for visits than was observed for coresidence. Among cases with one or two married sons the correspondence is fairly close, however, as the number of sons increases the correspondence tends to decline substantially. One possible reason for the lack of correspondence in visits relates to a difference in question wording across the two surveys. In the elderly survey the questions on frequency of contact were asked specifically about each non-coresident child, without reference to that child’s spouse or children; in other words, subjects (apparently) reported the frequency with which they exchanged visits with a specific child, as opposed to with any member of the child’s family. In contrast, the KAP survey queried subjects as to the frequency with which she and/or her husband exchanged visits with the husband’s parents. To the extent that daughters-in-law exchange visits with their parents-in-law, without their husband being present, the KAP figures would tend to overestimate the frequency of visits relative to the elderly survey. Whether or not this difference in question wording can account for the total difference observed between the direct estimates from KAP and the indirect estimates from the elderly survey cannot be determined, but at least the direction of the difference supports this as a partial explanation.

In addition to the explanation given above, it is possible that the perceptions of children and parents with regard to the contact they have with one another differ, such that children perceive that
they are spending more time with their parents than the parents themselves perceive. This difference in perceptions could take many forms—children may have a more inclusive definition as to what constitutes a visit, such as counting the times when they stop by their parent’s house to drop something off or pick something up as visits; whereas parents may tend to focus on encounters that involve a greater degree of social interaction. Similarly, between working, managing households and caring for their own children, the lives of adult children are likely to be much more hectic than those of their elderly parents; as a result, it is conceivable that children may feel that they spend more time with their parents than they actually do (or than they have time for).

A third possible explanation lies in the assumptions involved in the indirect estimate. The formula used assumes independence across children—that is, the probability that one child within a family visits is not related to the probability of another child’s visits. As discussed in the Appendix, there is reason to expect children within the same family to resemble each other in their behavior and to the extent that they do, an alternate method of indirect estimation is required.

It is also possible of course that the older and younger generations differ in their level of reporting errors on visits and other interactions under consideration here. As discussed below, sorting out the sources for difference response patterns across generations will require studies in which actual parent-child dyads are interviewed with identical questions.
Financial Transfers

The final topic of investigation in this study relates to financial transfers made by children to their parents. As mentioned previously, the elderly survey obtained information on exchanges of various types of support that took place between elderly subjects and a full range of kin and non-kin, regardless of their location. In regard to financial support, respondents were asked whether "there is anyone who gives money to help you now;" if respondents answered affirmatively, they were asked to name all persons providing such support and to identify the one person who provided the most support during the past year. Because of the way in which the questionnaire was developed, it is possible to link each provider with the full range of characteristics obtained for that individual and, thus, to identify the provider’s relationship, sex, marital status, and other characteristics of interest.

The KAP survey also obtained detailed information on financial transfers to both the subject’s parents and her husband’s parents. In particular, respondents were asked if they gave money to parents(in-law) regularly or occasionally during the past year and, if so, what the purpose of the monetary gift was (e.g., to help with regular expenses, to purchase extra things, as a remembrance for a special occasion such as a birthday, holiday, etc.). Because the proportion engaging in financial transfers varies sharply depending upon how the transfer is defined, we explore several different classifications of transfers from the KAP survey, based on more and less inclusive definitions.

Table 7 presents the direct estimates of the proportion of subjects receiving (and not receiving) financial support from a married son age 25-54 years, based on data from the elderly survey. Overall, 71 percent of the elderly who have one or more married sons receive financial support from a married son. As was the case for both coresidence and daily visits, the proportion receiving financial support tends to increase with the number of married sons.

Direct estimates for the proportion of married sons (respondent couples) in the KAP survey who provide financial support to parents are shown in Table 8. These estimates are presented for various definitions of financial support, with the column labelled (1) corresponding with the most restrictive definition (gave money regularly) and column (3) corresponding with the most inclusive definition (gave money regularly or occasionally for regular expenses or extra things). As mentioned above, the estimates of the proportion providing financial support differ dramatically across definitions; for example, among those in families with two married sons, the proportion providing regular financial support is just over one third (0.37), whereas the proportion providing regular or occasional support is close to two-thirds (0.66). This highlights the sensitivity of estimates of support transfers to question wording and/or classification of responses, particularly when comparing estimates across surveys. There is, perhaps, surprisingly little variation in the proportion providing financial support to parents across family size under any definition of support.

Indirect estimates for the proportion of non-coresident married sons exchanging daily visits with parents based on the elderly survey are presented in the last column of the table. The calculation procedure used to obtain the indirect estimates (and its underlying assumptions) is the same as that used for visits. A comparison of indirect estimates across family size suggests that the proportion of married sons providing financial support declines as the number of married sons increases, a pattern not observed for the direct estimates based on the KAP survey within any given definition.

What is most interesting in comparing the direct and indirect estimates, however, is that as the number of married sons increases from one to three sons, there is a shift in the definition of financial support that provides the highest correspondence with the indirect estimate. For example, among those with one married son, the indirect estimate based on the elderly survey is very close to the direct estimate based on the most inclusive definition of financial support (0.61 versus 0.65, respectively); among those with two sons, however, the proportion associated with the middle definition provides the
highest correspondence with the indirect estimate (0.49 for indirect and 0.45 for direct); for subjects with three or more married sons, however, it is the most restrictive definition of financial support that provides the highest correspondence with the indirect estimate. It should also be noted that, as the number of sons increases beyond three, the correspondence between the indirect estimates and the direct estimates (based on the most restrictive definition) tends to decline. These patterns are intriguing from a substantive standpoint, and may suggest that older parents with few married sons are more cognizant (or place greater value) of the financial contributions made by sons, regardless of their frequency or quantity, whereas more may be required of sons from large families in order for the contribution to be reported.

**Conclusion**

This paper presents a preliminary investigation into the degree of agreement on a series of exchanges between parents and children taken from two independent sources: a survey of the elderly and a survey of couples of reproductive age. It is well known that a difference in perspectives can produce disparate measures simply due to a shift in the unit of analysis, and the formal relationships for several types of measures have been well developed (see Freedman et al., 1991, and the appendix to this paper). Much less is known about differences that arise because of difference in question wording, expectations, normative constraints and related dimensions that must always be considered in interpreting survey results. As interest in the social and economic well-being of the elderly increases and the role of exchanges and transfers receive increased attention, it is likely that a wider array of sources for obtaining such information will be pursued. Given the constraints on resources, it is tempting to consider efficiencies that can be gained by adding questions on exchanges and relationships with parents to cross-sectional surveys designed primarily for other purposes, such as fertility, migration, or labor force participation (Hermalin, 1993). Accordingly, the potential and limitations of these additional sources of information merit greater attention.

Before summarizing and discussing the differences observed across the two sources analyzed here, it is important to note the fairly high degree of agreement on general orders of magnitude. Both sources point to some decrease over time in the level of coresidence of parents with a married son, but both also indicate that, as of the mid to late 1980’s, coresidence was still quite common, with 57 percent of the elderly coresiding in 1989 as observed in the elderly survey (see Table 1), and 44 percent of married sons coresiding in 1985-86 from the KAP survey (see Table 2). Both sources also agree that parents and children are in frequent contact, even if not coresident: 28 percent of parents report exchanging daily visits with non-coresident married sons; and one-quarter to one-third of the non-coresident couples from the KAP survey report daily visits with the husband’s parents. Similarly, the level of financial support from children to parents appears to be at a high level from both sources: 71 percent of the elderly report receiving financial support from a married son (see Table 7), and a high percentage of couples report making such contributions from the KAP survey. The precise level of support reported by couples depends on the stringency of the definition (see Table 8), but even under the most restrictive definition about 40 percent of the couples report providing money regularly.

The difference in perspectives means that we cannot simply align such data to test whether they are in agreement, and the paper also provides indirect measures to gauge how close the estimates compare across sources. In the case of coresidence, there appears to be reasonably close agreement with the narrow definition of coresidence, once the possible trend line (i.e., the continuing decrease of coresidence between 1985-86 and 1989) is taken into account. At the same time, the rather large difference in the estimates with the broader definition of coresidence reminds us that estimates of coresidence may hinge a great deal on the definitions and questions asked in countries like Taiwan, where various complex forms of living arrangements are possible (such as living apart and sharing a kitchen or eating together, or parents rotating among their children). The differences in the estimates
of children exchanging visits with parents daily in Table 6 appear larger in general than for coresidence (or financial support). As noted, this may be due to the differences in definition since the KAP survey includes visits from the daughter-in-law and the elderly survey does not (at least not explicitly). If so, it suggests that daughters-in-law are responsible for a significant degree of contact with their husbands' older parents, which should be reflected in studies. Insofar as this is only a part of the explanation, the differences provide the intriguing suggestion that the perception of what constitutes a visit is very different from the parent's and child's perspectives, and this again needs to be followed up appropriately. A similar need for greater attention to the meaning of various transfers is seen in the difference in estimates of financial support given in Table 8. The estimates derived from the elderly survey coincide well with some definitions of support obtained from the children, but not well with others. If different sources are to be used to generate levels and trends in key aspects of exchanges and transfers, we will need to learn more about how question wording and differences in perspective affect the subject's understanding and the likelihood of reporting participation in an exchange or transfer. We will also need to explore the degree to which children in the same family resemble each other in their visiting and support behavior, since the indirect estimates presented assume independence. (See Appendix for further discussion.)

One way to increase our knowledge is to interview both the parents and the actual children engaged in a transfer to see whether they share common perceptions of the transaction. This approach was undertaken in a followup wave of the Taiwan Elderly Survey for which, in addition to reinterviewing the older respondents, personal interviews with all of the coresident children and telephone interviews with all non-coresident children were obtained for a one-quarter subsample of elderly subjects. The data from the followup survey are just becoming available, so we will soon be in a position to compare reports on a variety of transfers and contacts.
Footnotes

1 Because of the sample design of the KAP survey, older parents living only with unmarried children, or married daughters or married sons outside the age range are excluded; but the comparisons include both older men and women, and the widowed as well as those currently married.

2 This relation holds if we assume that each married son within a family has the same propensity to coreside even if there is a relation between coresidence and family size, as long as we assume that coresidence takes place with only one child. [See Appendix for derivation.]

3 Data prior to 1989 for the elderly comes from the Survey of Income and Expenditures and not special surveys of the elderly; the KAP figures in Table 2 are unadjusted for age of parent.

Acknowledgment

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References


Table 1

Percentage Distribution of Living Arrangements of the Elderly 65 and Older, Select Years, 1976-1989

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone or with Spouse Only</td>
<td>8.8</td>
<td>8.9</td>
<td>12.8</td>
<td>12.8</td>
<td>15.4</td>
<td>17.3</td>
<td>22.8</td>
</tr>
<tr>
<td>With Married Children</td>
<td>66.9</td>
<td>64.5</td>
<td>60.6</td>
<td>59.6</td>
<td>56.8</td>
<td>55.3</td>
<td>56.6</td>
</tr>
<tr>
<td>With Unmarried Children</td>
<td>16.8</td>
<td>20.6</td>
<td>21.0</td>
<td>22.3</td>
<td>22.4</td>
<td>23.0</td>
<td>14.1</td>
</tr>
<tr>
<td>Other Arrangements</td>
<td>7.5</td>
<td>6.0</td>
<td>5.6</td>
<td>5.3</td>
<td>5.4</td>
<td>4.4</td>
<td>6.6</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note: Data for 1976-1985 are from the Survey of Income and Expenditures; data for 1989 are from the Survey of Health and Living Status of the Elderly. The two sources may not be totally comparable - see text.

Sources: 1976-1985 from Lo, 1987
1989, special tabulation of the Survey of Health and Living Status of the Elderly

<table>
<thead>
<tr>
<th>Proximity to husband’s parents</th>
<th>1973</th>
<th>1980</th>
<th>1985-86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coresident</td>
<td>57.8</td>
<td>52.6</td>
<td>44.2</td>
</tr>
<tr>
<td>Same city or township</td>
<td>16.1</td>
<td>16.9</td>
<td>25.1</td>
</tr>
<tr>
<td>Farther away</td>
<td>26.1</td>
<td>30.5</td>
<td>30.7</td>
</tr>
<tr>
<td>Total (N)</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>(3981)</td>
<td>(3079)</td>
<td>(2612)</td>
<td></td>
</tr>
</tbody>
</table>

Note: To maintain comparability with earlier survey years, which sampled ever-married women age 20-39 years, the 1985-86 sample was restricted to subjects in that age range for this tabulation. The sample is further restricted to include subjects who have living parents-in-law, however, no age restriction was placed on the parents-in-law.
Table 3. Proportion of Elderly Parents Coresiding with a Married Son, by Number of Married Sons in Family: 1989 Survey of Health and Living Status of the Elderly in Taiwan

<table>
<thead>
<tr>
<th>Number of married sons age 25-54</th>
<th>Number of cases</th>
<th>Proportion living with a married son of specified age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1028</td>
<td>0.52</td>
</tr>
<tr>
<td>2</td>
<td>896</td>
<td>0.58</td>
</tr>
<tr>
<td>3</td>
<td>637</td>
<td>0.58</td>
</tr>
<tr>
<td>4</td>
<td>282</td>
<td>0.67</td>
</tr>
<tr>
<td>5</td>
<td>97</td>
<td>0.68</td>
</tr>
<tr>
<td>6</td>
<td>38</td>
<td>0.63</td>
</tr>
<tr>
<td>7</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Total</td>
<td>2988</td>
<td>0.57</td>
</tr>
</tbody>
</table>

| Mean number of married sons age 25-54 | 2.22 |

*a Selected on subjects who have one or more married sons age 25-54

* Too few cases to evaluate
Table 4. Living Arrangements of Elderly Parents vis a vis Married Sons, by Number of Married Sons in Family: 1985-86 KAP Survey

<table>
<thead>
<tr>
<th>Number of married sons</th>
<th>Number of cases</th>
<th>Husband’s parents live with subject/husband</th>
<th>Husband’s parents live with subject/husband and/or husband’s married brother(s)</th>
<th>Husband’s parents not living with a married son</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Narrow definition(^b)</td>
<td>Broad definition(^b)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>421</td>
<td>0.60</td>
<td>0.60</td>
<td>0.60</td>
</tr>
<tr>
<td>2</td>
<td>650</td>
<td>0.34</td>
<td>0.42</td>
<td>0.67</td>
</tr>
<tr>
<td>3</td>
<td>698</td>
<td>0.27</td>
<td>0.35</td>
<td>0.68</td>
</tr>
<tr>
<td>4</td>
<td>484</td>
<td>0.22</td>
<td>0.35</td>
<td>0.72</td>
</tr>
<tr>
<td>5</td>
<td>267</td>
<td>0.15</td>
<td>0.31</td>
<td>0.75</td>
</tr>
<tr>
<td>6</td>
<td>116</td>
<td>0.15</td>
<td>0.26</td>
<td>0.71</td>
</tr>
<tr>
<td>7+</td>
<td>33</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Total</td>
<td>2669</td>
<td>0.31</td>
<td>0.40</td>
<td>0.68</td>
</tr>
</tbody>
</table>

\(^a\) Too few cases to evaluate

\(^b\) Selected on subjects whose husband’s parents are living and age 60 years or over.

Broad definition includes cases for which husband’s parents rotate living with multiple children; narrow definition includes only those cases for which husband’s parents live with the subject and her husband on a permanent basis.
Table 5. Proportion of Elderly Parents Exchanging Daily Visits with a Non-Coresident Married Son, by Number of Sons: 1989 Survey of Health and Living Status of the Elderly in Taiwan\textsuperscript{a}

<table>
<thead>
<tr>
<th>Number of non-coresident married sons age 25-54</th>
<th>Number of cases</th>
<th>Proportion exchanging daily visits with a married son of specified age</th>
<th>Proportion exchanging less than daily visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>981</td>
<td>0.20</td>
<td>0.80</td>
</tr>
<tr>
<td>2</td>
<td>701</td>
<td>0.31</td>
<td>0.69</td>
</tr>
<tr>
<td>3</td>
<td>415</td>
<td>0.35</td>
<td>0.65</td>
</tr>
<tr>
<td>4</td>
<td>153</td>
<td>0.36</td>
<td>0.64</td>
</tr>
<tr>
<td>5</td>
<td>50</td>
<td>0.44</td>
<td>0.56</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
<td>0.61</td>
<td>0.39</td>
</tr>
<tr>
<td>7</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Total</td>
<td>2323</td>
<td>0.28</td>
<td>0.72</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Selected on subjects who have one or more non-coresident married sons age 25-54

* Too few cases to evaluate
Table 6. Comparison of Proportion of Non-Coresident Married Sons Exchanging Daily Visits with Parents from KAP Survey and Corresponding Proportion Inferred from 1989 Elderly Survey

<table>
<thead>
<tr>
<th>Number of married sons</th>
<th>1985-86 KAP Survey</th>
<th>1989 Elderly Survey: Indirect estimate of proportion of married sons exchanging daily visits with older parents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of cases</td>
<td>Proportion of subjects/husbands exchanging daily visits with husband’s parents</td>
</tr>
<tr>
<td>1</td>
<td>421</td>
<td>0.26</td>
</tr>
<tr>
<td>2</td>
<td>650</td>
<td>0.24</td>
</tr>
<tr>
<td>3</td>
<td>698</td>
<td>0.28</td>
</tr>
<tr>
<td>4</td>
<td>484</td>
<td>0.28</td>
</tr>
<tr>
<td>5</td>
<td>267</td>
<td>0.32</td>
</tr>
<tr>
<td>6</td>
<td>116</td>
<td>0.30</td>
</tr>
<tr>
<td>7+</td>
<td>33</td>
<td>*</td>
</tr>
</tbody>
</table>

* Too few cases to evaluate
Table 7. Proportion of Elderly Parents Receiving Financial Support from Married Sons, by Number of Married Sons: 1989 Survey of Health and Living Status of the Elderly in Taiwan

<table>
<thead>
<tr>
<th>Number of married sons age 25-54</th>
<th>Number of cases</th>
<th>Proportion receiving financial support from married son of specified age</th>
<th>Proportion not receiving financial support from married sons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1028</td>
<td>0.61</td>
<td>0.39</td>
</tr>
<tr>
<td>2</td>
<td>896</td>
<td>0.74</td>
<td>0.26</td>
</tr>
<tr>
<td>3</td>
<td>637</td>
<td>0.78</td>
<td>0.22</td>
</tr>
<tr>
<td>4</td>
<td>282</td>
<td>0.79</td>
<td>0.21</td>
</tr>
<tr>
<td>5</td>
<td>97</td>
<td>0.84</td>
<td>0.16</td>
</tr>
<tr>
<td>6</td>
<td>38</td>
<td>0.76</td>
<td>0.24</td>
</tr>
<tr>
<td>7</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Total</td>
<td>2988</td>
<td>0.71</td>
<td>0.29</td>
</tr>
</tbody>
</table>

* Selected on subjects who have one or more married sons age 25-54

* Too few cases to evaluate
Table 8. Comparison of Proportion of Married Sons Providing Financial Support to Parents from KAP Survey and Corresponding Proportion Inferred from 1989 Elderly Survey

<table>
<thead>
<tr>
<th>Number of Married Sons</th>
<th>Number of cases</th>
<th>Proportion of subjects/husbands providing financial support to husband’s parents under various definitions a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>1</td>
<td>421</td>
<td>0.37</td>
</tr>
<tr>
<td>2</td>
<td>650</td>
<td>0.37</td>
</tr>
<tr>
<td>3</td>
<td>698</td>
<td>0.41</td>
</tr>
<tr>
<td>4</td>
<td>484</td>
<td>0.41</td>
</tr>
<tr>
<td>5</td>
<td>267</td>
<td>0.43</td>
</tr>
<tr>
<td>6</td>
<td>116</td>
<td>0.41</td>
</tr>
<tr>
<td>7+</td>
<td>33</td>
<td>*</td>
</tr>
</tbody>
</table>

* Too few cases to evaluate

a Definitions of financial support:

(1) Gave money regularly (as opposed to occasionally, on special occasions, or never), regardless of purpose.

(2) Gave money regularly, or occasionally if given for purpose of paying for regular expenses.

(3) Gave money regularly, or occasionally if given for purpose of paying for regular expenses or extra things.
Figure 1 distinguishes among three types of measures that might be obtained directly or indirectly from surveys of parents or children. These are the proportion of parents (or elderly) with a specified trait or characteristic; the existence of a transfer or exchange between a parent and one child; the existence of transfers or exchanges that can occur between a parent and several children. This appendix derives the formal relationships between several of the direct and indirect measures, provides some simple illustrative calculations to assist in visualizing the shift in perspective across generations, and touches on some non-formal issues relevant to the comparisons. The discussion and derivations are carried out from the standpoint of utilizing independent surveys of older and younger people to estimate the parameters of interest, illustrated in the paper. The presentation here complements and expands on V. Freedman et al. (1991) which focuses on exchanges with a single child, and presents a detailed derivation and examples.

I. Estimating Parental Status

We first address the question of ascertaining the status of a parent with regard to a certain characteristic, either directly from interviews of the older population or indirectly from interviews among their children. These characteristics can be a wide set of social or economic or health characteristics which for simplicity can be treated as dichotomies, such as completed primary school or not, whether in poverty or not, whether disabled or not, etc. It is worth noting in this regard that whether the parents are coresiding or not, leaving aside the question of who they coreside with, is a trait that can be treated in a similar way. In each case one can visualize asking a sample of older people whether or
not they have a certain trait and also interviewing a sample of younger people about whether their parents do or do not have the trait. Figure A illustrates this situation for 10 families, with the elderly numbered from $P_{(1)}$ to $P_{(10)}$, and the number of children each has indicated beneath; in this case three of the elderly have no children; four have one child; and three have three children. Those parents with the trait are shown by an asterisk. (Note that traits like coresidence require the presence of a child, while others, like disability, do not. For this reason $P_{(2)}$ is shown with a double asterisk to indicate this difference.)

**Figure A**

Schematic of 10 Elderly and Their Children for Illustrating the Interrelationships between Reports of Parents and Children

<table>
<thead>
<tr>
<th>Elderly/Parent</th>
<th>**</th>
<th>*</th>
<th>*</th>
<th>*</th>
<th>*</th>
<th>*</th>
<th>*</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child(ren)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1*</td>
<td>1*</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1*</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Signifies that parent has trait in question or engages in an exchange with one child.

The child involved in the exchange is also designated by an asterisk.

** Signifies that an older person with no children has a given trait (e.g., poverty, disability).

The following notation suffices to show the basic relationships:
Let

\[ P_j = \text{Number of parents with } j \text{ children} \]

\[ P_j^* = \text{Number of parents with } j \text{ children who have trait of interest} \]

(1) \[ q_j = \frac{P_j^*}{P_j} = \text{probability that a parent with } j \text{ children has trait} \]

(2) \[ Q = \frac{\sum P_j^*}{\sum P_j} = \text{over-all proportion with trait, or probability that a parent reports the trait} \]

Note that:

(3) \[ Q = \frac{\sum j q_j P_j}{\sum P_j} = \frac{\sum P_j^*}{\sum P_j} = \frac{\sum P_j^*}{\sum P_j} \]

that is, the over-all proportion with the trait is the weighted average of the probability in each sib size \( j \), with the weights equal to \( \frac{P_j^*}{\sum P_j} \), the proportion of parents in each family size category.

Let:

\[ C_j = \text{total number of children in sibship size } j = \sum P_j \]

\[ C_j^* = \text{total number of children in sibship } j \text{ whose parents have the trait, } = \sum P_j^* \]

Average number of children across all parents \( \bar{C} = \frac{\sum j P_j}{\sum P_j} \) or

(4) \[ \bar{C} = \frac{\sum j P_j}{\sum P_j} \]
Proportion of Children in Sibship \( j \) whose parent has trait is:

\[
\frac{C_j^*}{C_j} = \frac{jP_j^*}{jP_j} = \frac{P_j^*}{P_j} = q_j
\]

Proportion of All Children who are from a given sibship size is

\[
\frac{C_j}{\sum C_j} = \frac{jP_j}{\sum jP_j}
\]

the proportion of all children whose parent has the trait (or the proportion reporting that their parent has trait) can be written as:

\[
R = \sum q_j \frac{jP_j}{\sum jP_j} = \sum \frac{jP_j^*}{jP_j} = \frac{\sum jP_j^*}{\sum jP_j} = \frac{\sum jP_j^*}{\sum C_j}
\]

that is, the over-all proportion of children whose parent has a trait is the weighted average of the proportion of parents (or children) with the trait within each sibship, weighted by the proportion of all children who are from sibship \( j \). Since the proportion of children from a given sibship size does not equal the proportion of parents from that category (i.e. \( \sum P_j \neq \sum jP_j \)), the over-all proportion of parents with a trait (\( Q \)) will not equal the over-all proportion of children reporting that trait (\( R \)), unless the \( q_j \) do not vary across sibsize (compare equations (3) and (7)).

A practical implication of this is that to compare reports of children and parents about the existence of a parental trait, the reports of children by sibship size should be weighted by the family size distribution from the parental perspective. This is the calculation used on page 10 when comparing the average proportion of parents coresiding from the elderly survey with the observed proportion of sons reporting that
their parents were coresiding with them or a married brother, as given in column 5 of Table 4. The over-all proportion given in Table 4 implicitly uses the children's weights.

II. Exchanges with One Child

We consider next the algebra relating parental and child reports of an exchange (including coresidence) that involve only one child (or in our case, one married son).

Let

\[ e_j = \frac{P_{j}^*}{P_j} = \text{proportion of parents in size } j \text{ involved in an exchange with a child (or probability that a parent with } j \text{ children is involved in exchange)} \]

Consider drawing one child from each family which is engaged in an exchange and ascertaining whether or not that child is involved in the specified exchange.

Then,

\[ s_j = \frac{1}{j} = \text{prob of drawing the child involved in the exchange from family size } j \]

\[ \frac{jP_j}{\sum jP_j} = \text{proportion of all children who are from family size } j \text{ (or probability of being a child from size } j); \]

(8) \[ R_j = \text{joint probability of selecting a child from family size } j \text{ and that child being involved in exchange is:} \]

\[ R_j = e_j s_j \frac{jP_j}{\sum jP_j} = e_j \frac{1}{j} \frac{jP_j}{\sum jP_j} = e_j \frac{P_j}{\sum jP_j} \]

The over-all probability of selecting a child engaged in an exchange (or the proportion of all children engaged in the exchange) is:
\begin{align*}
R &= \sum R_j = \sum e_j \frac{P_j}{\sum jP_j} = \sum \frac{P_j^*}{\sum jP_j} \frac{P_j}{\sum jP_j} = \frac{\sum P_j^*}{\sum P_j} \cdot \frac{\sum P_j}{\sum jP_j} = Q \frac{1}{C} \\
\end{align*}

That is, the proportion of children reporting an exchange equals the proportion of parents reporting the exchange times the reciprocal of the average size family. (This is the formula presented by Freedman et al. (1991; 641) from a similar derivation.)

Alternatively,

\begin{align*}
Q &= R \overline{C} \\
\end{align*}

The proportion of parents involved in an exchange is equal to the proportion of children times the average size family. Note that this result holds even though the proportion of parents coresiding varies across family size, i.e., that \( e_j \) varies with \( j \).

[Also note from equations (8) and (9) that \( R \) may be interpreted as the proportion of children from size \( j \) involved in an exchange \( e_j s_j \), weighted by the proportion of all children who are from that sibship.]

The algebra for exchanges with one child can accommodate coresidence or exchanges with more than one child by considering:

\begin{align*}
\text{Though we introduce the derivation by imagining drawing one child from each sibship, the actual data we employ comes from sample surveys. The basic result in equation (10) remains unaffected whether we think of a sample of parents and children or the underlying populations, given that the probability of selecting children from a given size sibship will be proportional to the size of the sibship. Indeed the derivation given may also be interpreted from a sampling standpoint as the joint probability that a parent engages in an exchange \( e_j \) times the probability of selecting the child involved \( s_j \) and the probability of selecting children from sibship size \( j \),}
\end{align*}
\[ i e_j = \frac{i P_j^s}{P_j} = \text{proportion of parents in size } j \text{ involved in exchange with } i \text{ children.} \]

\[ i s_j = \frac{i}{j} = \text{probability of selecting one child from } i \text{ involved in the exchange,} \]

With these changes:

\[ i R_j = e_j i s_j \frac{j P_j}{\sum_j P_j} + 2 e_j s_j \frac{j P_j}{\sum_j P_j} + \ldots + i e_j s_j \frac{j P_j}{\sum_j P_j} \]

\[ i R_j = (e_j \frac{1}{j} + 2 e_j \frac{1}{j} + \ldots + i e_j \frac{1}{j}) \frac{j P_j}{\sum_j P_j} \]

and following equations (8) and (9) we have

(11) \[ R = Q_1 \frac{1}{C} + 2 Q_2 \frac{1}{C} + \ldots + i Q_i \frac{1}{C} \]

or

\[ R \bar{C} = (Q_1 + 2 Q_2 + \ldots + i Q_i) \]

where \( Q_i \) is the proportion of parents coresiding with \( i \) children.

It is also possible to obtain the variance of the underlying random variates in order to gauge the precision of the estimates. Without full derivation we state:

Mean of the random variate \( \left( \frac{q_j}{j} \right) \)

is equal to \( \sum_j \frac{f_i q_j}{j} = \frac{Q}{C} \)

and the variance of \( \left( \frac{q_j}{j} \right) \) is
\[
\left( \sum_{j} \frac{f_i q_j^2}{j^2} \right) - \left( \frac{Q}{C} \right)^2
\]

III. Illustrative Calculations

The relationships set forth above can be illustrated simply from the data in Figure A:

For Parental Trait

Prop. of All Elderly with Trait: \( \frac{5}{10} = \frac{1}{2} \)

Prop. of Parents with Trait: \( \frac{4}{7} \)

From equation (3), the over-all proportion of elderly (parents) with trait \( Q \) is:

\[
\frac{1}{3} \cdot \frac{3}{10} + \frac{2}{4} \cdot \frac{4}{10} + \frac{2}{3} \cdot \frac{3}{10} = \frac{5}{10}, \quad \text{or} \quad \frac{2}{4} \cdot \frac{4}{7} + \frac{2}{3} \cdot \frac{3}{7} = \frac{4}{7}
\]

Total Number of Children: 13

Proportion from Sibship 1: \( \frac{4}{13} \)

Proportion from Sibship 3: \( \frac{9}{13} \)

Average Size Family:

\[
\bar{C}_E = \text{Based on all elderly} = \frac{13}{10}
\]

\[
\bar{C}_P = \text{Based only on parents} = \frac{13}{7}
\]

Proportion of Children whose Parent Has Trait: \( \frac{8}{13} \)

From equation (7):
\[
\frac{2}{4} \cdot \frac{4}{13} + \frac{2}{3} \cdot \frac{9}{13} = \frac{8}{13}
\]

Note that \(\frac{4}{7} \neq \frac{8}{13}\)

For Exchange with One Child (e.g., Coresiding with one child)

\[
Q_E \quad \text{Proportion of All Elderly Coresiding} \quad \frac{4}{10}
\]

\[
Q_P \quad \text{Proportion of Parents Coresiding} \quad \frac{4}{7}
\]

\[
R \quad \text{Proportion of Children Coresiding} \quad \frac{4}{13}
\]

From equation (10):

\[
Q_E = R \cdot C_E = \frac{4}{13} \cdot \frac{13}{10} = \frac{4}{10}
\]

\[
Q_P = R \cdot C_P = \frac{4}{13} \cdot \frac{13}{7} = \frac{4}{7}
\]

From equation (8):

\[
R = \frac{2}{4} \cdot \frac{1}{13} \cdot \frac{4}{13} + \frac{2}{3} \cdot \frac{1}{3} \cdot \frac{9}{13} = \frac{2}{13} + \frac{2}{13} = \frac{4}{13}
\]

Note that the proportion of all elderly coresiding (including those without children) can be estimated from children's reports, if the proportion childless is known so that the average size family can be adjusted accordingly.

Given that the thrust of the paper is to reconcile reports from two different surveys—one of the elderly and one of children—the data in Figure A may be recast in that form to show the interrelationships. (The following arithmetic assumes that all 10 elderly and all thirteen children are interviewed, but any representative sample will produce the same results since the proportion of elderly from each sibship size will
remain the same, and the proportion of children from each sibship will also remain intact.)

From the Elderly Survey

<table>
<thead>
<tr>
<th>No. Of Children (or Married Sons)</th>
<th>No. of Respondents</th>
<th>Proportion Coresiding</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>2/4</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2/3</td>
</tr>
</tbody>
</table>

Average Size Family:

All Elderly: \[\frac{13}{10}\]

All Parents: \[\frac{13}{7}\]

From Survey of Children (or Married Sons)

<table>
<thead>
<tr>
<th>Size of Sibship</th>
<th>No of Respondents</th>
<th>Proportion Coresiding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>2/4</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>2/9</td>
</tr>
</tbody>
</table>

Proportion Coresiding from Elderly Survey:

All Elderly: \[0 \times \frac{3}{10} + \frac{2}{4} \cdot \frac{4}{10} + \frac{2}{3} \cdot \frac{3}{10} = \frac{4}{10}\]

All Parents: \[\frac{2}{4} \cdot \frac{4}{7} + \frac{2}{3} \cdot \frac{3}{7} = \frac{4}{7}\]
From Survey of Children (or Married Sons)

Proportion of Children Coresiding

\[
\frac{2}{4} \cdot \frac{4}{13} + \frac{2}{9} \cdot \frac{9}{13} = \frac{4}{13}
\]

Estimated Proportion of Parents Coresiding

\[
\frac{4}{13} \times \frac{13}{7} = \frac{4}{7}
\]

Estimated Proportion of All Elderly Coresiding*

\[
\frac{4}{13} \times \frac{13}{10} = \frac{4}{10}
\]

*Average size for all elderly cannot be obtained from survey of children alone.

IV. Exchanges with More Than One Child

As noted, there are a series of transfers and exchanges that can and often do occur with more than one child. Each child can call or visit a parent or help support a parent through transfers of money, time, or goods. In the text we compare direct reports from children with an indirect estimate based on the reports from parents. Compared to coresidence, perceptions of what constitutes a visit or assistance may differ across generations and these differences are often exacerbated by differences in question wording across surveys.

The estimates presented are based on a simple application of the binomial theorem and ignore those social-psychological and methodological issues. In addition, the theorem assumes that each child acts independently of the other, a strong assumption when measuring family dynamics as discussed further below.
The algebra may be set forth as follows:

\[ V_{ij} = \text{prob that parent } i \text{ with } j \text{ children receives at least one visit (or one transfer) from any child} \]

Then \[ V_{ij} = 1 - Q_{ij} \]

where \( Q_{ij} \) is the probability that parent \( i \) with \( j \) children receives no visits (i.e., that no child visits). \( Q_{ij} \) is equal to the product of the probabilities that each child of parent \( i \) does not visit, assuming independence across children.

\[ Q_{ij} = q_{1j} \cdot q_{2j} \cdot q_{3j} \cdots q_{jj}, \quad \text{and} \]

if each child’s propensity to visit or not visit is the same, then

\[ Q_{ij} = q_{*j}^j, \quad \text{where } q_{*j} \text{ is the propensity of a child in family } j \text{ not to visit.} \]

Accordingly

\[ q_{*j} = \sqrt[\text{j}]{Q_{ij}} \quad \text{and the probability of each child to visit is} \]

\[ p_{*j} = 1 - q_{*j} = 1 - \sqrt[\text{j}]{Q_{ij}} \]

which is the formula presented in the text.

With the assumption of independence and equal propensities among the children, the binomial theorem gives the probabilities that a parent will have \( 0, 1, 2, \ldots j \) children visiting. As example, if \( p_{*j} \) equals \( 1/3 \) then the probabilities for a parent with three children are:
<table>
<thead>
<tr>
<th>Number of Children Visiting</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>8/27</td>
</tr>
<tr>
<td>1</td>
<td>12/27</td>
</tr>
<tr>
<td>2</td>
<td>6/27</td>
</tr>
<tr>
<td>3</td>
<td>1/27</td>
</tr>
</tbody>
</table>

Conversely, if it is observed that $8/27$ of parents with three children receive no visits, the propensity of a child to visit can be estimated from the equation above as:

$$p_{*j} = 1 - \frac{8}{27} = 1 - \frac{2}{3} = \frac{1}{3}$$

It will be observed that under the binomial assumptions, the probability of each child visiting is lower than the proportion of parents receiving visits. In the example given $19/27$ of parents receive visits but we would expect only one-third of the children to report visits.

It can be seen from Table 6, that in fact the proportion of children reporting visits is much closer to the proportion of parents reporting visits. As noted, this may be due to differential perceptions or technical issues of question wording, but it may also reflect that the independence assumption is not tenable. If children within a family are likely to resemble each other in their visiting or support behavior, this degree of resemblance must be reflected in the estimates. As illustration, consider 27 families of three children each. Assume that in 9 of the families all the children visit and in 18 none of the children visit. Then the proportion of children visiting is $1/3$ (i.e., 27 out of 81 children) and the proportion of parents receiving one or more visits is also $1/3$ (i.e., 9 out of
The degree of resemblance among children within a family can be measured by the intraclass correlation (Haggard, 1958; Kish, 1965, 170-73). In this example, the intraclass correlation is one; and generally the higher the intraclass correlation, the closer we would expect the proportions to be between those reported by parents and children, all other things equal.

The social and economic dynamics operating among families in Taiwan (and elsewhere) would suggest that some degree of resemblance among children is to be expected. Among rural families, children may settle nearby; children may want to maintain contacts with parents who control resources; and children may operate a business in cooperation with their parents, to name but a few likely scenarios.

Measuring the degree of resemblance in contacts and exchanges requires observations on each child in the family. The Taiwan Elderly Survey did ask each parent to report on exchanges by each child separately, so the degree of resemblance among children, at least as reported by parents, can be estimated. In addition, a recent round of the Taiwan Elderly Survey obtained such information from each child within the family and will provide estimates of the degree to which children within a family resemble each other in these respects. Preliminary calculations indicate an intra-class correlation of .32 on the similarity of non-coresident children in the degree to which they visit their parents daily.