THE THEORY AND MEASUREMENT OF RECIPROCITY

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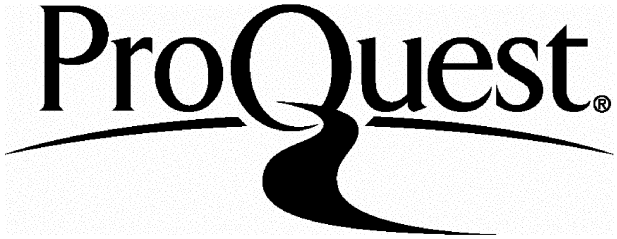
Submitted for the degree of
Doctor of Philosophy

October 1999



Acknowledgments

There are many people who directly and indirectly, knowingly and unknowingly have contributed to the present thesis.

In particular I would like to record my debt to Professor Adrian Furnham for his initial decision to accept me under his tutelage, for his continued belief, support and encouragement, without which I would surely have faltered.

Also to Lynne for the patience that she has shown in the times when I was 'on my perch' working at home.

To Dr John Cape who originally suggested that I contemplate further study and my colleagues at work who have been bemused at times by my 'sounding out' ideas in their presence.

To those who I have not mentioned specifically, if as you read this, you recognise yourself, please accept my grateful thanks for your contribution.

Abstract

Reciprocity has been used in the psychological literature as an explanatory concept in the formation and maintenance of social networks (Wellman, Carrington, & Hall, 1988). However, a review of the existing reciprocity literature found little consensus on the formal theory and definition of reciprocity. Definitions of reciprocity varied by study and used measures with inadequate psychometric properties. Older adults (50 years+) were participants in 49% of the studies reviewed. All the current studies reported used a predominantly student population.

Using exploratory factor analysis (principal components, varimax rotation) a value based reciprocity measure with three factors (instrumentality, sociality and guidance) was developed. The scale comprised 132 items. There was a bias to placing higher values on the receipt of favours. Further development of the scale reduced the measure to 72 items. The receiving guidance factor was correlated with family members ($r = .23$; $n = 98$; $p < .05$); and the giving guidance factor with friends ($r = .22$; $n = 98$; $p < .05$).

In a further refinement of the reciprocity measure two scales (each of 15 items) were developed, *Icount* and *Mecount* (Cronbach's alpha = .97). Both scales were found to correlate significantly with social network size ($r = .34$; $n = 64$; $p < .01$). Significant correlations between the IPRI reciprocity scale (Tilden, Nelson, & May, 1990) and both *Icount* ($r = .52$; $n = 93$; $p < .01$) and *Mecount* ($r = .44$; $n = 93$; $p < .01$) support the construct validity of the new reciprocity measure.

Different relationships with the index measures of social support were found as a function of the calculation method (difference; ratio; multiplication). A distinction between enacted and perceived reciprocity was found similar to that reported in the social support literature (Newland & Furnham , 1999). A cognitive schema is proposed as a working model for future research in the area.

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Chapter 1: Introduction to the concept of reciprocity

The term 'reciprocity' has various meanings. In order to set the context for the thesis, the following chapter forms a preface to the detailed literature review contained in chapter 2. It sets the scene for the studying 'reciprocity' within psychology.

Reciprocity has been used as an explanatory concept for the development of culture in the anthropological literature (e.g., Levi-Strauss, 1974; Sahlins, 1965); for bargaining in the economic literature (e.g., Blau, 1964) and for analysing group membership in the sociological literature (e.g., Gouldner, 1960; Gouldner, 1973). Generally, however, the concept of reciprocity has largely been neglected in the psychological literature.

An exception is the literature on health outcomes of older adults. However, even in the latter literature the concept of reciprocity has been defined and measured differently in most studies thus, precluding cross study comparisons. The varied technical definitions have rendered reciprocity into a multifaceted and vague concept.

The following four sections summarise reciprocity within the anthropological, economic, sociological and psychological literatures as relevant to the present thesis.

Reciprocity in the anthropological literature

In the anthropological literature, the concept of reciprocity is used to explain the emergent social structures of family, neighbourhoods and culture. Even in cultures with a low overall social organisation, where members have no obligations to laws or leaders, reciprocal social relations preceded economic transactions. The latter finding was demonstrated in a classic anthropological study undertaken by Evans-Pritchard (1940) of the Nuer people in the Upper Nile.

Sahlins (1965) reviewing the literature on reciprocal social relations and cultural identity noted that:

> " ...the connections between material flow and social relations is reciprocal. A specific social relation may constrain a given movement of goods, but a specific transaction - 'by the same token' - suggests a particular social relation. If friends make gifts, gifts make friends" (ibid. p.139).

He identified three forms of reciprocity: generalised reciprocity, where assistance is given and, if possible and necessary, returned; balanced reciprocity, direct and equal exchange of goods; and negative reciprocity, an attempt to get something for nothing with impunity. The term 'generalised reciprocity' would best describe the psychological concept under consideration in the present thesis.

In some cultures the interrelationship between the social structure (social relations), and function (the gift exchanged) can be specified precisely. Yan (1996) in a detailed study of a small Chinese village community described "four operating rules of gift exchange". The rules were that a 'good' person always interacts in a reciprocal way; that the size of a gift should conform to the existing hierarchical social order; that the gift should reflect previous interactions; and that there was a defined etiquette in the return of gifts. *Renqing* (reciprocity) was found to be a centrally important concept in the village system of exchange with its connotation of social norms and moral obligations. Social participation in the village was dependent on understanding and complying with *renqing*, determining who was reciprocated, when they were reciprocated and what was reciprocated. Thus, the concept of *renqing* has a deontological rather than a utilitarian status and again can be encompassed within the concept of generalised reciprocity.

'Balanced reciprocity' and 'negative reciprocity' are more akin to reciprocity as described in the economic literature.

Reciprocity in the economic literature

In the economic literature, early attempts by social psychologists to refine the theoretical conception of resource exchange typically used economic theories for their analyses. However, economic theory, per se, is unlikely to provide a comprehensive explanation of why or even how resource exchange occurs. A zero sum game using money, such that one person gains the amount that another person loses is easy to conceptualise. A similar zero sum game using non-monetary psychological resources is harder to conceptualise. At least some form of putative money/psychological resource currency exchange mechanism would be required. As previously discussed, such an intervening process would invariably be linked to non-economic factors. Empirical evidence also indicates that when predictions based on standard economic theory are compared with those from social exchange theory, even within a perceived economic domain, standard economic theory is poorly supported. In a study investigating wage negotiations it was hypothesised that if only economic principles were operating then employers should try to offer the lowest wages that workers would accept and that workers should maximise their utility by working at the minimum level possible (Kirchler, Fehr, & Evans, 1996). However, co-operation was found to be at a much higher level than predicted by economic theory, suggesting that reciprocation norms were influencing the outcomes. Explanations based on social exchange theory assume that additional social norms are operating and in particular that of reciprocal exchange.

Reciprocity in the sociological literature

The concept of reciprocity within the sociological literature has developed along two main themes. The first theme has used the "norm of reciprocity" to explain how group norms define the individual behaviour of group members. The second theme has focused on the exchange of goods and services that then defines group membership.

The first theme was proposed by Gouldner (1960 pp.171-172) :

> "Specifically, I suggest that a norm of reciprocity, in its universal form, makes two interrelated, minimal demands: (1) people should help those who have helped them, and (2) people should not injure those who have helped them....To suggest that the norm of reciprocity is universal is not, of course, to assert that it is unconditional. Unconditionality would, indeed, be at variance with the basic character of the reciprocity norm which imposes obligations only contingently, that is, in response to the benefits conferred by others. Moreover, such obligations of repayment are contingent upon the imputed *value* of the benefit received .....Whether in fact there is a reciprocity norm specifically requiring that returns for benefits received be *equivalent* is an empirical question... Equivalence may have at least two forms, the sociological and psychodynamic significance of which are apt to be quite distinct. In the first case, heteromorphic reciprocity, equivalence may mean that the things exchanged may be concretely different but should be equal in *value*, as defined by the actors in the situation. In the second case, homeomorphic reciprocity, equivalence may mean that exchanges should be concretely alike, or identical in form, either with respect to the things exchanged or to the circumstances under which they are exchanged".

The concept of heteromorphic reciprocity is similar to that of Salins 'generalised reciprocity', and homeomorphic reciprocity to that of 'balanced reciprocity'.

Although the 'norm of reciprocity' continues to be used extensively in the sociological literature as an explanatory concept (e.g., Burger, Horita, Kinoshita, Roberts, & Vera, 1997; Uehara, 1995), the most recent formulation (Gouldner, 1973) is not empirically testable.

However, the empirical question as to whether the reciprocity norm specifically requires that returns for benefits received be *equivalent* is testable. No published studies have been reported that evaluate this question. The effect of elapsed time on reciprocal behaviour has been studied. Burger (et al.,1997) found that participants offered a free soft drink from a confederate were more likely to respond to a subsequent immediate request from the confederate to deliver a letter. However, a week later there was a significantly lower response to the request. The finding suggests that the norm of reciprocity defines a social rule requiring reciprocation within a given time frame, rather than an open-ended obligation to return favours.

The second theme of reciprocity is exemplified in the work of Wellman (1988), who in a major study of a whole community in Canada (the East York community in Toronto) found that asymmetric reciprocal exchange behaviour defined membership of social groups within the community. Reciprocal exchange created non-random social networks of clusters and cross linkages. Finite limits were found within these social networks with respect to the number and intensity of ties that an individual could maintain. In the East York community an individual maintained a median of eleven active ties. The structure and composition of these ties resulted in marked variation in the type, extent and breadth of social support available through them.

Reciprocity in the psychological literature

The anthropological and sociological literatures construe reciprocity as a structural variable. Social psychology theorists consider reciprocity as resource exchange within an implied generic structure (that is, that there is one structural form in which exchange occurs). With respect to resource exchange, the social psychology literature shares the implicit assumption prevalent in the economic literature, that

social network variables contribute little to the resource outcome between two people. For example, Foa (1980) while demonstrating that interpersonal resource exchange could not be explained by a money-merchandise exchange mechanism, did not attribute any significance to the structural system in which resource exchange occurs. Currently social exchange theories minimise or ignore the relationship between functional and structural factors because of the difficulty in combining the disparate conceptual frameworks of social network analysis and individual exchange processes.

For example, static bias, inherent in social network analysis, makes it difficult to conceive a dynamic structure varying as functional requirements change.Therefore the effects of structural factors can be conceptualised as variance to be controlled for rather than allowed to covary. Conversely, functional factors can be conceived of as interchangeable and therefore as not having an influence on social network structure. However, the concept of reciprocity needs to account for the concurrent operation of both structural and functional factors.

A further difficulty is that the concept of reciprocity has been employed in an *ad hoc* and unsystematic way that prevents the cumulative incorporation of findings. For example, when reporting the results of experimental work on reciprocity the terms 'network balancing' and 'generalised reciprocity' are used implying that the construct is being measured across the total reported social network members. In fact research on reciprocity across large social networks has not yet been reported.

The concept of reciprocity has been used to account for psychological well-being by clinical researchers working within mental health (Meeks & Murrell, 1994; Simmons, 1994); older people (Ingersoll-Dayton & Antonucci, 1988) and learning disability populations (Tausig, 1992). Again the range of assessment methods across these populations makes coherent integration of the literature difficult. Given the high face validity of reciprocity as an explanatory concept its construct validity remains to be substantiated in literature.

In summary, the concept of reciprocity may provide a linkage to the transactional nature of resource exchange with social structures. Further, reciprocity may potentially link the structural and functional aspects of psychological well-being. However, the nature of these linkages can only be understood if reciprocity is defined and measured in a way that allows comparative analysis .

Social support and reciprocity

One research area that provides an opportunity to investigate the relationships between functional and structural factors is that of social support. The social support literature can be considered as an amalgam of two major research areas, that of resource exchange and social networks. Integrating these two research areas has always been regarded as important attainment and there have been attempts at achieving a theoretical synthesis (e.g., Wellman, 1988). However, social network researchers working in the area of social support continue to develop explanations based on network structure, using concepts of power, prestige, centrality, and network density. The term the 'socio-social network' has been reserved for this area or system-centred networks (Wilcox & Birkel, 1983). Similarly social psychologists researching social support continue to use network size as a proxy for social network variables. Measures and procedures that go beyond the individual level other than network size are seldom used. While a focus on the 'person-social network' is recommended, the major research focus continues to examine the functional nature of receiving social support and its relationship to physical and psychological well-being. Four potential reasons can be advanced to explain the reluctance in researching the person-social network relationship. Firstly, correlations between network variables and measures of social support are typically low. However, though reported correlations between network size and social support are low, they are consistently positive (e.g., Nelson, Brent-Hall, Squire, & Walsh-Bowers, 1992). The low correlations potentially reflect the fact that not all relationships in the network provide positive support functions. Increasing network size will also increase the potential for, and number of,

conflicted relationships thereby 'cancelling' out some positive relations. The attendant decrease in correlation may reflect this effect.

Secondly, social support theorists have usually considered social support as a unidimensional construct operating at the individual level. External social relationships are then considered to have secondary importance in the explanation of psychological well-being. Chapter two will more extensively analyse and discuss the multidimensional nature of social support.

Thirdly, there is a tendency to focus on the receipt of support resources. It is broadly assumed that support is unidirectional from a provider to a recipient. The bidirectionality of social support has been noted but not examined in detail:

> "The social psychological aspects of this phenomenon-the study of social support as an interpersonal transaction that involves both a provider of support and a recipient- is nearly absent" (Vinokur, Schul, & Caplan, 1987).

Social support as transactional, and hence reciprocal, has been identified as theoretically significant (Leavy, 1983; Sarason, Sarason, & Pierce, 1990a) but the experimental literature separates into direct effects of social support in studies looking at structural variables and buffering effects found in studies of functional variables (Cohen & Wills, 1985).

A fourth reason not investigating reciprocity is the lack of a measurement scale. Scales that do include a measure of reciprocity often use a single item to indicate how much support has been given and received by the person over the total network. Assuming that the measure is reliable, the demand bias in such a direct assessment would lead at least to over reporting of reciprocity levels. Further, the use of such a measure assumes not only equivalence among all the support resources exchanged, but also that there is no intrinsic perception that individuals view

themselves as offering more than they receive. Consequently such a bias would itself be evident in the self-reporting of giving more than they received, a finding that is typical in the few studies that have looked at reciprocity.

In studies that consider the difference in support provided by kin and non-kin there are indications that the nature of the bias is towards perceiving that more support is received from kin than given, and that more support is offered to non-kin than is received. When measurement scales do use more items, different problems are encountered. Typically reciprocity is calculated as the difference between giving and receiving as measured by two scales containing the same items but reworded. A major problem is that the reliabilities of the two scales operate to reduce the reliability of the reciprocity scale (effectively the difference score).
An equation for calculating the reliability of a difference score is given by Tilden and Stewart (1985) :

$$pDD = \frac{\rho xx\ \sigma^2 x + \rho yy\ \sigma^2 y - 2\rho xy\ \sigma x\ \sigma y}{\sigma^2 x + \sigma^2 y - 2\rho xy\ \sigma x\ \sigma y}$$

Where pDD = reliability of Reciprocity difference scores

ρxx = reliability of Give scores

ρyy = reliability of Receive scores

$\sigma^2 x$ = variance of Give scores

$\sigma^2 y$ = variance of Receive scores

ρxy = correlation between Receive and Give scores

Inspection of equation (1) shows that if the correlation (ρxy) between the two scales from which the difference is calculated is high then the reliability of the difference score is less than the individual scales from which it originates. Specifically the reliability of a difference score will equal the average reliability of its component parts only when no correlation exists between the two scales. A high correlation would occur if the means for receiving and giving were similar, a not unlikely

occurrence in an homogenous population and given the demand biases referred to earlier. Moreover, the lowered reliability would also curtail correlations with any other subsequent measure selected, e.g., locus of control scale (Levenson, 1981). Thus, the interpretation of a difference score is problematic through occasions arise where using them may be relevant. It has been suggested that the presence of strong relationships between potential components and a criterion are generally *a priori* grounds for resisting the calculation of difference scores (Johns, 1981).

Further if difference scores are used then two caveats apply. First, the components should be internally consistent multiple-item scales and not heterogeneous collections of factorially indeterminant items; and secondly, that the reliabilities of the difference scores should be reported and corrections for attenuation performed. Methodologically the two scales could also be presented at different points in the assessment to reduce memory effects. Little attention has been paid to the problematic calculation of difference scores within the reciprocity literature. An alternative method of defining reciprocity without using difference scores is to correlate the two scales measuring giving and receiving transactions (Nelson et al., 1992). The use of ratio scores has also been discussed but not reported on (Hatfield, Utne, & Traupmann, 1979).

A second set of measurement problems arises from the time scale of the measure. The measure of reciprocity is usually taken at one point in time. It is thus assumed that the decision to act reciprocally is based on a momentary appraisal of the past transactions with the person being considered.

One accounting mechanism, proposed by Antonucci (1990) was that of a support bank:

> "people maintain an ongoing account of the amount of support or various benefits they have given to and received form others. This account may be kept at different levels of consciousness; that is,

people may say in specific circumstances, 'I am doing this for someone because he or she previously did that for me or so that he or she will do such and such for me in the future".

It may be that individuals who have a more global conception of their relationships with specific others (or a generalized other such as family) will be willing to provide for others in time of need. The assumption is that they too will receive assistance if, and when, they are in need (Fischer, 1982). The support bank analogy can be taken further. The currency used may in future be subject to 'interest' rate changes such that the required return becomes higher over time. The need to reciprocate as soon as possible, by non-kin, may be evidence that indebtedness not only is felt as uncomfortable but also that the cost will be higher later. The importance of the support bank for social support theorists is that it emphasises the dynamic nature of support provision over time. The support bank concept can also account for the differences between cultures in reciprocal behaviour within kin structures (Akiyama, Antonucci, & Campbell, 1990). Thus, in the measurement of reciprocity the timescale over which reciprocity is considered is a significant factor.

The present thesis, is pioneering in that it is provides a theory and a measure of reciprocity based on functional and structural measures. A significant assumption within the thesis is that reciprocity is not defined as the actual support resources exchanged but perceived exchange. Evidence for perceived reciprocity is given, in part, from the observation of the low correlations between received support and psychological well-being. The question about whether to measure existing social relations or social relations as perceived by the actors involved also depends upon the focus of the research. For example, in research investigating needle sharing among individuals tested positive for HIV/Aids actual social network membership is relevant. However, perceived ties may be more appropriate for studying social influences on attitudes and other individual difference measures. These perceived ties are sometimes called "cognitive networks"(Marsden, 1990). A cognitive model

for reciprocity would include a schema for balancing giving and receiving in terms of equivalence and potentially maintaining an equilibrium within a timescale that is dependent on the relationship. For example, it would be hypothesised that immediate "repayment" would not necessarily occur between relatives and people with longer term relationship expectations (e.g., Ingersoll-Dayton & Talbott, 1992). A similar finding was reported in a study with college students (Jung, 1990).

The following thesis has two main objectives. Firstly, to outline a theory of reciprocity using a cognitive representation of behaving reciprocally; and secondly, to provide a reliable and valid measure of reciprocity. The study of reciprocity is important because potentially it bridges both functional and structural research areas.

Chapter 2 Reciprocity: a concept for integrating functional and structural aspects of social support

Introduction to reciprocity and social support

The publication output on social support follows a recognised course in the psychological literature. An initial interest in the area is followed by a focus on measurement issues, development of conceptual issues, relationships to outcomes, then application to various populations. A waning in publication output occurs as the complexity of the area makes further progress more difficult. There then follows a rediscovery often by association with another research area. The next step is for a new integrative conceptual model to emerge that restarts the publication cycle.

Evidence for such a developmental course is given by figure 2.1 that was produced by graphing the number of published papers containing the term "social support" in the title by year of publication. The data points are from a literature search in the psyclit database and the social sciences citation index.

The differential decline is, in part, due to the interdisciplinary research represented by the social science citation index, and the maturation of the area within the psyclit database. Although reciprocity and social support have been linked since 1981, there have been few reported studies overall.

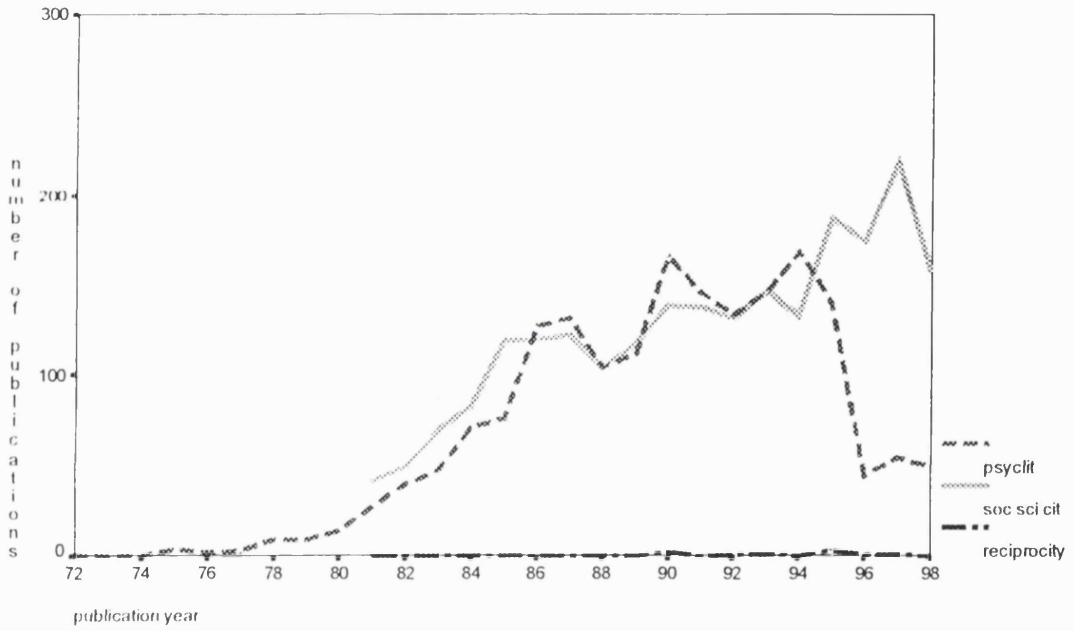

Fig. 2.1 Publications containing 'social support' in their title by year

Even with the prolific research activity on social support significant questions remain. An area that has not been fully investigated is the linkage between the structural and functional aspects of social support in terms of both theory and measurement. In a major review of the social support literature Cohen (1985) concluded that social support had a buffering effect on stress when measures of perceived availability were used, and a direct effect when the degree of integration in a social network was measured. That conclusion has subsequently been maintained in the literature (e.g., Alloway & Bebbington, 1987) with the theoretical emphasis strongly favouring perceived rather than behavioural (enacted) social support (Helgeson, 1993; Helgeson & Cohen, 1996).

Social support researchers have consistently emphasised the need to clarify the linkages between structural and functional aspects (Barrera, 1986; Barrera & Ainlay, 1983; Caplan, 1974; Cassel, 1976; Cobb, 1976; House & Kahn, 1985; Thoits, 1995).

Figure 2.2 gives representative quotations over a seven year timescale illustrating the conceptual overlap between social support and social networks. However, investigation of the structural and functional aspects of social support has been limited by the use of research designs that correlate only network size (as a proxy variable for social network structure) and functional measures developed primarily on the positive receipt of support. From the absence of a consistent positive correlation between the two constructs, it is adduced that there is no relationship between the structural and functional aspects of social support.

" First, 'social support' may best be understood as a metaconstruct, referring to three subsidiary constructs: support network resources, supportive behaviors, and subjective appraisals of support". (Vaux, Riedel, & Stewart, 1987 p.209)
" I propose broad categorical classifications of the concepts commonly included under the social support rubric. Three classes of support concepts (measures) are proposed: social networks, perceived social support, and supportive behaviors". (Cohen, 1992 p.109)
"Social support measures may be divided into three general categories: network measures, measures of support actually received or reported to have been received, and measures of the degree of support the person perceives to be available". (Sarason & Sarason, 1994 p.43)

Figure 2.2 Quotations proposing a linkage between social support and social networks

The transactional nature of reciprocity has been identified as one key mediating variable (Antonucci & Jackson, 1990; Antonucci & Johnson, 1994). Unfortunately the *ad hoc* measurement of reciprocity within the literature has led to low aggregation and generalisability of research findings. Thus, the use of meta-analytic methods (Rosenthal, 1991; Wolf, 1986) is premature.

A literature review of the social support literature from 1976 to the 1998 identified 35 published studies that specifically sought to measure reciprocity. The studies included are also widely cited. The range of definitions used is given in table 2.1 by year of publication.

In order to indicate the comparative "value" of the study with respect to reciprocity an index was created by summing across five study characteristics that were each given a weight of one for the presence of the characteristic and zero for the absence. The study characteristics were: a definition of reciprocity that included at least two support dimensions; a scale with more than two items per support dimension; quoted psychometric properties; an exploratory factor analysis; and correlation with other known support reciprocity measures. Thus, a value of four would represent a study comparatively higher than a study with a value of one. Using the basic index none of the published studies had a value of five; one had a value of four; seven had a value of three; eight had a value of two; five had a value of one and 14 (40%) had a value of zero. Table 2.2 abstracts and arranges the findings by salient order for the present discussion.

Table 2.1 Definitions of Reciprocity by year of study

Ikkink (1998) Index=3 "**Three questions** were posed about **instrumental support** given, for example, 'How often did it occur in the past year that you helped the following persons with daily chores in and around the house, such as preparing meals, cleaning the house, transportation, small repairs or filling in forms?' Three similar questions were asked about the instrumental support received and six questions were asked about the **emotional support** given and received. An example of emotional support given: 'How often did it occur in the past year that you showed the following people you cared for them?' The choice of answers was 'never', 'seldom', 'sometimes', and 'often' and they were scored on a scale from one to four. For each relationship a sum score of instrumental and emotional support received and given was computed; the scores of the four scales ranged from 3 to 12...The reciprocity variables were constructed by subtracting the support received by the older adult from the support given. A negative score indicated that the older adult was being overbenefited by the network member, a score of 0 indicated that giving and receiving were exactly equal, and a positive score indicated that the older adult overbenefited the network member" p.64
Jung (1997) Index=3 "Rather than using the ratings of the ISSB, however, I modified it to provide a measure of balance of support by asking participants to consider not only the frequency of receipt of each behavior but also how often they performed each behavior for others. Participants rated each item on a 3-point scale in terms of whether that behavior was received more than given (3), given more than received (2), or received and given in equal frequency (1) over the past month. Separate balance indices were constructed for the **four types of support** (guidance, tangible, emotional, and informational) found in Stokes and Wilson's (1984) **factor analysis** of the ISSB p.80".
Horwitz (1996) Index=2 "In this research patients were asked about their contributions to the family member who they gave the most help to in the **seven areas** of chores, economic contributions, providing care for others, companionship, participation in family activities, expressing affection, and giving gifts. Possible responses of a lot (3), some (2), a little (1), and none (0) are summed to form an index of patient social support. This index has an **intra-item reliability** (Cronbach's Alpha) of .80" p.154

Neufeld (1995) Index = 0 "A thematic form of content analysis was used to analyse the interview data...The Ethnograph computer program was used to assist in the process of coding and data analysis. Guiding questions for the analysis included: Does reciprocity exist in these caregiving situations? What is reciprocity in these situations? How is it manifested? By whom? When does it occur? With what consequences?" p.352
Williams (1995) Index = 0 "I collected the data on reciprocity from a single open-ended question and any additional field notes that mentioned reciprocity. Parents were specifically asked 'Do you ever feel a need to 'pay back' family or friends for their assistance?' p.404."
Rinatala (1994) Index = 0 "Each participant was asked to name persons whom he or she deemed to be important sources of help, support, and guidance. The participant then rank-ordered this list of persons with regard to importance and indicated whether each of the five top-ranked supporters was either the participant's parent, child, spouse, sibling, other relative, friend, neighbor, fellow club or church member, or coworker, or was a professional worker. To obtain measures of reciprocity, for each of the five top-ranked persons, the participant was asked whether the other person helped the participant more, the participant helped the other person more, or they helped each other equally (i.e., reciprocal relationship). The number (maximum of five) of each of these three types of relationships was calculated for each participant. p.19".
Dwyer (1994) Index = 0 "The primary caregiver was asked about four possible tasks (i.e., household chores, babysitting, money gifts, keeps caregiver company) that the elder may provide in the context of the caregiving relationship. These tasks are summed to create a reciprocity indicator that ranges from 0 to 4 p.38".

Buunk (1993) **Index = 0**

The measure of perceived reciprocity in both studies derived from checking one of the following answers after considering their relationship (e.g., showing understanding, giving information, expressing appreciation) with their superiors (and a duplicate procedure with colleagues):

1.I am providing much more help and support to my superior than I receive in return
2. I am providing more help and support than I receive in return
3. We are both providing the same amount of help and support to one another
4. My superior is providing more help and support to me than I provide in return
5. My superior is providing much more help and support to me than I provide in return

The subjects were then divided into three groups: those receiving reciprocity (score 3) those feeling deprived (scores 1 and 2) and those feeling disadvantaged (scores 4 and 5).

Cordova (1993) **Index = 0**

"Negative reciprocity was defined as the occurrence of aversive behavior on the part of one partner given aversive behavior by the other p.562"

Walker (1992) **Index = 1**

"Because it is important to represent a variety of resources in any study of resource exchange, in this study, perceptions of the giving(receiving) of **love, information, advice, and money**, which vary in the two fundamental resource properties, were assessed.
The focus of this study was on the perception of reciprocity in caregiving. Therefore, research questions highlighted this caregiving context. Specifically, for each type of aid, mothers were asked, "Do you feel you give your daughter (type of aid) in return for her helping you? Responses were coded yes, no, or don't know. Individuals who answered "no" were not asked follow-up questions. This procedure should lead to underestimations of aid if other nonconditional aid also was given.
For each aid type, daughters were asked, "How much (type or aid), if any, do you feel your mother gives you in return for you helping her? Responses were a great deal, some, not much, none. We were interested primarily in distinguishing daughters who perceived that they received aid in return for their help from those who did not. When daughters indicated that "not much" aid was received, they often indicated that the amount of aid received was very little or almost none. Therefore, "not much" responses were grouped together with responses of "none" into a "no aid" category. "A great deal" and "some" were grouped together p.83

Stevens (1992) **Index = 2**

Reciprocity in family support questionnaire:

The following questions refer to you and your family members. Your family members are those people to whom you are related either by blood or through marriage.

1. In the past six months, how often have you given your affection (a hug, kiss, told them you love them, or offered advice) to a family member?

1. Never or hardly ever
2. Sometimes
3. Frequently

2. In the past six months, how often have you received **affection** from a family member?

3. In the past six months, how often have you assisted a family member with **household tasks, babysitting, transportation, or money**?

4. In the past six months, how often have you received assistance from a family member?

Scale scores of 1-2 = low reciprocity;

2.25-2.50 = moderate reciprocity ; 2.75-3.00 = high reciprocity

alpha = .70

Nelson (1992) Index = 3

Four stage process of data collection:

(1) Residents asked to name the people who were important to them with whom they had had contact over the past nine months categorised as family, friends and professionals;

(2) Residents then asked to describe qualitatively how their relationships had changed over the past few months in terms of both positive and negative changes;

(3) Residents asked to provide information on the nature of their contacts specifically to identify the members on their network list who had provided the four types of supportive **(emotional, social, tangible, problem-solving)** and unsupportive transactions. For each item scores were calculated by summing the number of people named in the three network segments.

(4) Frequency of supportive and unsupportive transactions provided to and received from network members. For each of the four types of support, give and received, residents asked to rate on a five point scale how frequently that transaction had occurred over the past month (1 = not at all to 5 = almost every day) scored as averages across network members therefore did not differentiate between types of network member

Kulis (1992) Index = 1

"Intergenerational patterns of assistance were assessed through five paired questions. First, parents filled out a chart indicating whether or not each of their adult children regularly did the following for the parent:
(a) '**listens to problems** and provides advice';
(b) '**provides news** about mutual friends and the family';
(c) '**helps out** with household tasks, including transportation';
(d) '**provides financial assistance**';
(e) '**provides companionship**'. Then the parents indicated whether they, or their spouses, regularly did each of these things for the adult child. p.487"

van Tilburg (1991) **Index = 2**

Four measures:

(1) total reciprocity for dichotomous scores
(2) total reciprocity for raw scores

based on the aggregate sums of the number of reciprocal relationships in any given network

(3) relationship specific

(4) support specific

In order to generate the network list (based on an exchange approach)
20 questions were asked which included the following areas: **helping with household chores, talking about personal problems, borrowing a large sum of money, taking care of children, having coffee or drinks at home.**

Only the first 10 names were recorded.

6 **questions** referred to emotional support
8 **questions** to instrumental support
4 **questions** to social support
2 questions (hobbies and social activities) were not reciprocally scored.

Primomo (1990) **Index = 0**

Variation on the use of the Norbeck Social Support Questionnaire (Norbeck et al., 1981) with the addition of one question "the extent to which each network member discussed important problems with the respondent (reciprocity) p.155."

Kirschling (1990) **Index = 4**

Cost and Reciprocity Index (CRI)

Assessment comprises three stages:

1. Subjects identify the people who are important to them and their relationship with the identified people;

2. Subjects identify the five most important people, the inner network;

3. Subjects respond to 38 likert type questions for each person listed in their inner network

The subscales comprise:

(a) social support (10 items) alpha = .92

(b) **reciprocity (9 items) alpha = .86**

(c) cost (6 items) alpha = .89

(d) conflict (13 items) alpha = .94

N = 261

items range from 'not at all' (0) to a 'great deal' (4).

An example of a reciprocity item is

'How often do these people come to you for a boost in spirits?'

Jung (1990) **Index = ?**

A modified version of the SSQ (Sarason et al., 1983) using every other item of the Number Scale and coding for both amount of support received and also for how much support was provided by the respondent. The SSQ(S) was not used.

13 questions were used.

Total support received was calculated as the mean number of support providers named on scale items. Similarly total support provided was the mean number of people to whom support was given.

Family and Friends were distinguished for the reciprocity analysis as well as total reciprocity.

A conceptual distinction was made between lenient & stringent measures of reciprocity.

Lenient reciprocity was calculated as the reciprocity over the network of individuals, that is, summing over the dyadic relationships.

Stringent reciprocity was calculated by only counting the number of exchanges that involved the same people giving and receiving that form of support to each other summed over the scale items.

Dwyer (1990) **Index** = 2 "Finally, six tasks accomplished by elderly care-receivers that denote their ability to assist the primary caregiver (**chores, babysitting, money gifts, keeps company, feel useful, and other**) were summed to create a reciprocity indicator (**alpha** = .43) p.168"
Akiyama (1990) **Index** = 1 "By the term reciprocity, we refer to equal or comparable exchanges of **tangible aid, emotional affection, advice, or information** between individuals or groups. This limited definition is generally accepted without controversy, referring simply to the notion of exchange, that is, giving and receiving p.128". "The first study was originally conceived as a comparative study of the rules for reciprocal exchange of six kinds of basic interpersonal resources (money, goods, services, information, status, and love) in the Japanese family and the American family p.129."
Antonucci (1990) **Index** = 1 "*Right now would you say you provided more* **support, advice, and help** *to your* (spouse, mother, father, child and friend) in your support network, is it about equal, or does he/she provide more to you?" p.523

Antonucci (1990) Index = 1

SSE measure: "Only those supports given to and received from children are included in our analyses here. The perceived reciprocity for the respondents was calculated as the arithmetic difference between the total number of supports received from children and the total number of supports provided to children. The resulting variable can thus be considered a composite reciprocity measure for supports exchanged between parents and their children, coded as **receiving more help than is given, equality of supports given and received, and giving more help than receiving help** p.182."

"NSBA reciprocity variable constructed from two questions that determine the general frequency of supports given to ("How often do you help your children?") and provided by children and immediate family ("How often does your family help you?") The measure is the arithmetic difference between the respondents' perceived frequency of help given and received. Coded as receiving more help than help given, equality of frequency of support given and received, receiving less help than giving help. Equality of frequency of help given and received is considered to be reciprocal.

Langner (1990) Index = 3

"Functional solidarity between the grandparent and the adult grandchild was determined by the frequency with which the grandparents gave assistance and received assistance in twelve activity categories to/from the adult grandchild with whom they had the most frequent contact. The categories included **expressive support: phoning, letter-writing, sending greetings cards, visiting, exchanging gifts, and giving advice; and instrumental support: help with transportation, bureaucratic red tape, personal care, shopping, meal preparation, and household chores.** Four response categories measured frequency: very often, fairly often, occasionally, or never. The research focused on perceived rather than actual reciprocity as the data are based on self-reports from the principal respondents p.103"

"Indicators of both expressive exchange and instrumental exchange were summarized in expressive and instrumental exchange scores. The score was an indicator of a respondents' perception of reciprocity in each index. In the indices, if the calculation resulted in a score of 100, this indicated a reciprocal relationship between the dyad. A score > 100 indicated more respondent support given than received, while a score of < 100 indicated that respondents received more support than they gave p.105"

Babchuk (1989) Index = 0

Self report via interview using the norm of reciprocity

No additional information given

Ingersoll-Dayton (1988) Index = 0

"An index was constructed to assess whether or not support was reciprocated. The index was created by counting the number of people within each type of relationship (i.e., spouse, children, and friends) from whom respondents said they received support and subtracting the number to whom the respondents said they gave support:

Amount of Perceived Reciprocity = Number Who Received Support - Number Who Provided Support.

If the above calculation resulted in a zero, this number indicated a reciprocal relationship, and respondents were coded as reciprocal. A positive number showed that respondents received more support than they gave; they were coded as receiving more. A negative number indicated that respondents provided more support than they received; they were coded as giving more. p.S67"

Rook (1987) Index = 2

"The number of positive inputs received from network members was computed by summing the number of receiver exchange items as a 1. The number of positive inputs provided to network members was similarly computed by summing the number of provider exchange items scored as a 1. These measures thus assess the number of distinct social functions performed (e.g., **loaning money, comforting, socializing**) rather than the total number of people engaged in these functions. That is, a woman with a small network might engage in as many different types of exchanges as a woman with a large network. Scores on these two measures could range from 0 to 7, because they focus on exchanges as the unit of analysis p.148."

Similarly constructed measures for (1) reciprocity in the three social exchange categories difference scores range from
-2 t o +2;

(2) an average number of reciprocal exchanges with friends, calculated by summing total exchanges between friends and dividing by total number of friends;

(3) average number of reciprocal exchanges with adult children, calculated by sum of exchanges with children divided by total number of children.

Maton (1987) **Index = 2**

A 7-day activity log was maintained by each participant which recorded material support transactions that had occurred between the participant and individuals in their church.

The participant listed who had provided and who had received the **material support**; what item had been provided or lent, and for how long. **Services** were also included with an indication of the time involved. For each transaction the dollar economic value was calculated. The coding was undertaken by trained undergraduate coders, interrater reliabilities averaged .87.

"*Individuals' scores on Providing and Receiving were obtained by summing each amount* separately over their nine logs. Since the distributions of Providing and Receiving scores had extreme skewness and kurtosis, log-10 transformations were applied to normalize the distributions. For each individual, then, the amount of providing and the amount of receiving over a 9-month period converted into dollar amounts and transformed by log 10 represented the primary measures of material support p.189".

Eisenberger (1987) **Index = 3**

A questionnaire called the Reciprocation Ideology Questionnaire (RIQ) developed for the study which had **two clear factors** based on beliefs that :

(a) returning greater help than previously received will result in generous repayments **(creditor ideology) alpha** = .79; and

(b) caution in returning help is required to avoid being taken advantage of **(reciprocation wariness) alpha** =.80

Roberto (1986) **Index** = 3

"A *modified version of the Walster Global Measure of Participants' Perceptions of Inputs*, Outcomes, and Equity/Inequity (Walster et al, 1978b) was used to measure respondents' perceptions of equity in their friendships. Respondents were asked to indicate their own and their friends' contributions and outcomes associated with the relationship. The equity questions were presented to the respondent in the following manner: 'I would like you to think about your relationship with your best friend. Taking all things into consideration (i.e., how much do you help each other, the kinds of things you share with each other, etc.), please answer the following questions: (1) How would you describe your contributions (what you give) to your relationship? (2) How would you describe your friends' contributions to your relationship? (3) How would you describe your outcomes (what you get) from your relationship? (4) How would you describe your friend's outcomes from your relationship?'. Responses for each question ranged from extremely low (1) to extremely high (8) p.243".

Helping Component included: financial aid, transportation, shopping, running errands. **Affective Component** included: help making important decisions, sharing personal problems, displaying physical affection.

Stoller (1985) **Index** = 2

"Two dichotomous indices were developed. The first-which measures the provision of help by the older person to children, other relatives, and friends or neighbours-has a value of 1 if the older person provides help in at least one of the following areas: **babysitting, running errands, household repairs, transportation, housework or yardwork, food preparation, advice on problems with children or household management, and advice on financial decisions.** To tap the provision of services to the older person by children, other relatives, and friends or neighbours, an index was created which has a value of 1 if the older person received help from the relevant category of helper in any of the following areas: food preparation, shopping, light chores, heavy chores, laundry, bathing, using the toilet, dressing and grooming, transportation, serving s a confidante, or assisting with financial management and personal business. By cross-tabulating each index of help given to the elder by the analogous index of help provided by the elder, a two-by-two table emerges which summarizes the patterns of exchange for each relationship category p.337".

Griffith (1985) **Index = 0** Structured interview "Now, who are those people in your life on whom you really depend when personal problems arise?" The sum of the number of people mentioned was the network size. For each person the question "Does this person depend on you in much the same way you depend on him(her)?" yes or no response. Network reciprocity was the percent of the network members that the respondent felt was mutually dependent.
Gallo (1982) **Index = 0** Primary network question was: " Please tell me the first names of the people you would most likely go to or talk to about problems or other matters of concern or importance to you. They may be relatives or non-relatives p.68" Directedness was defined as who initiates contact? Is it one way or two way?
Wentowski (1981) **Index = 0** "A series of pretested questions (such as, 'Who are the people you do things for?' and, 'Who are the people who do things for you?), encouraged informants to provide their own role terms for different kinds of helpers (typical responses were, 'my son', 'my best friend', or 'my across the fence neighbour') p.602."
Froland (1979) **Index = 3** **Social Network Assessment Questionnaire (SNAQ) developed specifically for the study**
Cohen (1978) **Index = 0** "*Directionality* will refer to the direction in which aid in a dyadic relationship flows: 'instrumentally,', from ego to another, 'reciprocally,' in equal measure between ego and another, or 'dependently,' from another to ego p.548."

Tolsdorf (1976) Index = 0

"Because there is a range of functions that could be served, it is possible that two individuals may serve an unequal number of functions for each other. To describe this imbalance, the number of functions the focal person serves for someone else is defined as his functional outdegree, and the number of functions served for the focal person as his functional indegree. ...When in a dyadic relationship 'indegree' does not equal 'outdegree,' the relationship is said to be asymmetric. I describe the asymmetry of the primary star by two indices: the number of asymmetric relationships and the proportion of asymmetric relationships. The range for the number is 0 to n, and for the proportion it is 0 to 1 p.410."

Table 2.2 Studies identified as using the concept of reciprocity in social support

Study	Participants	Method of assessment	Difference score used	Frequency or Dimensional scale	reciprocity term
Ikkink (1998)	older adults aged 55-89	questionnaire based on emotional and instrumental support	yes	frequency Loevinger coefficient => .55 reliability => .75	reciprocity
Antonucci (1990)	older adults over 50	single question about 6 types of support resource	yes	frequency	norm of reciprocity
Langner (1990)	older adults over 65	questionnaire	yes	frequency	reciprocity
Babchuk (1989)	older adults over 65	structured interview	yes	frequency	reciprocity
Ingersoll-Dayton (1988)	middle aged and older adults aged over 50	specifically designed measure	yes	frequency	perceived reciprocity
Rook (1987)	older widowed women mean age =72.4	modification of an existing method of network assessment	yes	frequency	asymmetric patterns social exchange
Gallo (1982)	older adults mean age = 70.3	single question	yes	frequency	directedness
Kulis (1992)	older parents with adult children	five paired questions	yes	dimensional	reciprocity

Study	Participants	Method of assessment	Difference score used	Frequency or Dimensional scale	reciprocity term
Roberto (1986)	older adults mean age = 73.8	specifically designed measure	yes	dimensional	reciprocity
Neufeld (1995)	women caregivers of older parents aged 37-71	interview	no	qualitative approach	reciprocity
Dwyer (1994)	impaired older adults mean age = 79.5	single question based on 4 chores	no	dimensional	reciprocity
Walker (1992)	older mothers (1) and their daughters (2) mean age(1) = 81.1 mean age(2) = 51.8	questions on the exchange of four resources	no	dimensional	perceptions of giving and receiving
Stevens (1992)	older adults aged 60-90	specifically designed questionnaire (four questions)	no	frequency alpha = .70	reciprocity
Antonucci (1990)	older adults aged over 65	single question	no	dimensional	reciprocity perception
Dwyer (1990)	frail older adults mean age = 77.4	single question based on 6 chores	no	dimensional alpha = .43	reciprocity
Stoller (1985)	older adults mean age = 73.5	Specifically defined index	no	index	reciprocity
Wentowski (1981)	older adults mean age = 71	a series of questions	no	dimensional	reciprocal exchanges

Study	Participants	Method of assessment	Difference score used	Frequency or Dimensional scale	reciprocity term
van Tilburg (1991)	pregnant women mean age = 28.7 recent movers mean age = 48 male retirees mean age = 60.6	structured interview and self-report questionnaire	yes	dimensional	reciprocity
Maton (1987)	church congregation mean age = 28.2	a seven day activity log completed monthly over nine months	yes	dimensional conversion of all activities into dollar values	bidirectional support
Griffith (1985)	general population sample (n=361) mean age = 41.1	single question	yes	dimensional	network reciprocity
Akiyama (1990)	American and Japanese female college students	structured interview	yes	dimensional	norm of reciprocity
Eisenberger (1987)	introductory psychology students	specifically designed measure	no	dimensional alpha values between .45 to .80	norm of reciprocity

Study	Participants	Method of assessment	Difference score used	Frequency or Dimensional scale	reciprocity term
Jung (1990)	introductory psychology students	modification of an existing social support questionnaire SSQ: Sarason et. al. (1983)	no	dimensional	reciprocity
Jung (1997)	introductory psychology students	modification of an existing social support questionnaire ISSB: Barrera (1981)	no	dimensional	balance of support
Froland (1979)	long term users of mental health services age range = 31-36	specifically designed measure	yes	dimensional	mutuality of exchanges
Cohen (1978)	former psychiatric inpatients mean age = 43	structured interview	yes	frequency	directionality
Williams (1995)	parents of children with cancer	single question	no	dimensional	reciprocity
Rinatala (1994)	persons with spinal cord injury mean age =37	5 network members ranked on 3 point scale	no	dimensional	reciprocity

Study	Participants	Method of assessment	Difference score used	Frequency or Dimensional scale	reciprocity term
Buunk (1993)	hospital (1) and railway employees(2) mean age (1) = 33 age (2) 80% between 26-55 years	rating of perceived giving and receiving	no	dimensional	perceived reciprocity
Cordova (1993)	couples experiencing domestic violence DV 34.6m 34.4f DNV 40.6m 37.3f HM 43.3m 41.6f	single question about 'aversive behavior'	no	frequency	negative reciprocity
Primomo (1990)	chronically ill women mean age = 41.3	modification of an existing social support questionnaire	no	dimensional	reciprocity
Kirschling (1990)	terminally ill relatives mean age =71.2	specifically designed questionnaire	no	dimensional alpha =.82	reciprocity
Horwitz (1996)	seriously mentally ill patients aged 18-55	single question based on 7 chores	no	dimensional alpha =.80	

Study	Participants	Method of assessment	Difference score used	Frequency or Dimensional scale	reciprocity term
Nelson (1992)	former psychiatric inpatients mean age = 34.4	specifically designed questionnaire	no	frequency provided alpha = .63 received = .70	reciprocity
Tolsdorf (1976)	psychiatric inpatients and medical patients age not given	structured interview	no	dimensional	asymmetric relationships

Inspection of table 2.2 indicates that 49% of the total number of studies were conducted with older adults (defined as over 50 years old) as participants. In order to maximise generalisability the reciprocity measure should be standardised on a representative population. It is likely that reciprocity would be essentially the same in different populations but would work at a different level. However, there are important psychological differences between older and younger individuals' participation in social exchanges. It has been suggested that there are inherent biases in social exchange patterns within the transactions of older people (e.g., Dowd, 1975; Gouldner, 1960) . Thus, a measure of reciprocity developed in this population would not only be age specific in content but also potentially measure inequality as a function of age. The fact that within this sub-set of studies reciprocity was predominantly conceptualised as the difference between two frequency scores would also over represent inequality as a function of content (Aging is correlated with a reduction in the frequency of social exchange of some support resources). When reciprocity was not measured as a difference score a dimensional scale based on the degree of reciprocal exchange of support resources (e.g., economic contributions; companionship) between the older adult and their

offspring was used. A similar bias of inequality as a function of content, would also be anticipated though potentially attenuated by the fact that since dimensional scales were employed perceived transactions were being measured . The loss of relationships with which to engage in social exchange introduces another bias into the use of an older population for developing a reciprocity measure.

Similarly, in comparison with general populations psychiatric populations both psychotic and nonpsychotic, are characterised by fewer linkages overall, fewer intimate relationships, greater asymmetrical and dependent relationships, and lower scores on perceived support even within hospital settings (Cohen & Sololovsky, 1978; Froland et al., 1979; Hammer, Makiesky-Barrow, & Gutwirth, 1978; Tolsdorf, 1976).

Exceptionally, Neufeld & Harrison (1995) used a qualitative methodology and employed 'prompt' questions to elicit statements about how the participants conceived reciprocity in their social relationships.

Where scales were developed the content was idiosyncratic precluding generalisation across studies. In part, the absence of a theoretical basis for conceptualising reciprocity provides an explanation for the lack of consistent content. Equity theory was used in one study (Roberto & Scott, 1986). In the majority of the studies the psychometric properties of the scale (e.g., reliability coefficients) were either not reported and or were in the low range of acceptability.

A similar picture emerges from inspection of the other 18 studies. The diverse range of participants studied, from introductory psychology students (Akiyama et al., 1990; Eisenberger et al., 1987; Jung, 1990) to a highly specific church congregation (Maton, 1987), coupled with the different measurement strategies, from a single question format (e.g., Williams, 1995), to a well developed Cost and Reciprocity Index (Kirschling et al., 1990) allows for little coherent comparison

about the concept of reciprocity.

With respect to measurement issues 15 (43%) of the studies used difference scores in order to calculate reciprocity of these studies 8 used frequency scales and 7 used dimensional scales . Frequency was used for scaling 11 (31%) of the studies. Only 7 (20%) of the studies reported any scale reliabilities. The use of frequency as a scaling technique has problems with respect to reciprocity. The various items that are rated may themselves vary in their frequency of occurrence. For example, an item on moving house contents for someone else may be an infrequent activity for both the respondent and their focal person(s). Rating the item as having a low frequency of occurrence with zero difference would lead to a spurious notion of reciprocity. In contrast, rating an item on making someone a meal with high frequency and having a meal made with low frequency would lead to a signed difference score that reflects the directionality of the item. The bias originates from the fact that meal preparation itself has a higher basal frequency of occurrence than moving house contents. None of the studies quoted make adjustment for these basal frequencies. An additional problematic factor in the use of frequency scaling is that it is dependent on the recollection of historical events. The effect of remembering trivial as opposed to significant items is likely to skew the frequency distribution by constraining the alternative. For example, an item on providing emotional support, say listening to personal problems, may have higher saliency because at the time of recollection it was perceived as beneficial support as a consequence of a personal crisis. The alternative capacity to reciprocate at the same time would be reduced. Hence, the resulting difference score based on frequency would then reflect not reciprocity but an inherent bias in the scaling. For dimensional scaling the alternative is not constrained in the same way.
For both frequency and dimensional scaling there is the possibility of a bias to report higher giving than receiving. The sensitivity of the frequency scale is likely to be higher for this form of bias compared to the sensitivity of dimensional scaling. Ascribing similar intentionality to significant others using dimensional scaling is likely to be an easier task rather than saying that significant others do

more. On the basis of these biases the use of dimensional scaling is preferable to frequency scaling.

In summary, the current review indicates the need for a theory based reciprocity measure with adequate psychometric properties in order that research results can be compared.

The next section considers social support theory and measurement in order to determine what would constitute a reciprocity scale.

Social support as unidimensional and operating at an individual level

Social support was initially conceived to be a resource provided by the social environment (Cassel, 1976). The presence or absence of relationships (e.g. marital status; community involvement; availability of confidants) was deemed to be the significant factor. In the absence of social support it was hypothesised that life events were more likely to exert negative effects. The social support literature developed using a life events model that labeled significant life events as stressors and associated these life events with psychological distress. The popularity of the life events model was that the tests were both short and easy to administer (e.g., Holmes & Rahe, 1967) and had high face validity given that these significant life events were commonly occurring situations (e.g., marriage, divorce, residential moves, job changes). Given that stress as defined by the life events scales was measured in terms of discrete, time limited events it was then plausible to state specific cause-effect relationships. Within the life events model the concept of social support as a moderating or mediating variable was both intuitively appealing and a logical possibility. However, substantial correlations were also reported between stress and social support variables themselves (e.g., Carveth & Gottlieb, 1979). Whereas in the life events literature the association between stress and social support variables could be attributed to measurement error, in the social support literature the correlation could more reasonably be interpreted as the

Social Desirability Scale (Crowne & Marlowe, 1960) is prevalent in many of the studies of social support with the typical finding of no significant correlations. Hence, only significant evidence of bias or alternative measurement methods will be reported here.

Reviews of social support scales generally report scale structure, reliability and validity data on primarily on the receipt of perceived/enacted support. Previous reviews have not linked the specific conceptualisation of social support to the measure developed preferring to use a generic and pragmatic approach (Bruhn & Philips, 1984; Cleary, 1988; Cohen, 1992; Dean, Holst, Kreiner, Schoenborn, & Watson, 1994; Depner, Wethington, & Ingersoll-Dayton, 1984; Heitzmann & Kaplan, 1988; House, 1987; House & Kahn, 1985; House, Umberson, & Landis, 1988; Leavy, 1983; O'Reilly, 1988; Payne & Jones, 1987; Sarason & Sarason, 1994; Schwarzer & Leppin, 1991; Shumaker & Brownell, 1984; Tardy, 1985; Tardy, 1988; Vaux, 1992; Winemiller, Mitchell, Sutliff, & Cline, 1993; Wortman & Dunkel-Schetter, 1987).

Further, social support is inherently conceptualised as a positive resource and most scales reflect this theoretical bias. While negative aspects of social support have been highlighted (Rook & Pietromonaco, 1987) the literature has rarely measured conflict or other negative dimensions. The current review has identified only one scale that meets the inclusion criteria and measures negative aspects (Lin, Dean, & Ensel, 1981). In the current review the primary theoretical conceptualisation will be summarised for each social support scale identified. Table 2.3 summarises the social support scale authors reviewed and table 2.4 summarises the social support dimensions. The review has attempted to identify published social support scales. There are likely to be other social support scales that are not available in the public domain. However, the primary purpose of the present review is not to undertake a meta-analytic study. The absence of unpublished material in a meta-analytic study leads to the apparent magnification of effect size because nonsignificant results are less likely to be accepted for publication (Wolf, 1986).

Table 2.3 Summary of Social Support Scales reviewed by conceptual base

(Weiss, 1974) ISSI: Interview Schedule for Social Interaction (Henderson, Ducan-Jones, Byrne, & Scott, 1980) PRQ: Personal Resource Questionnaire (Brandt & Weinert, 1981) PSR: Provisions of Social Relations (Turner, Frankel, & Levin, 1983) SPS: Social Provisions Scale (Russell & Cutrona, 1984)
(Caplan, 1974) PSS-Fr: Perceived Social Support-Friends / PSS-Fa: Perceived Social Support-Family (Procidano & Heller, 1983) ISSB: Inventory of Socially Supportive Behaviours (Barrera, Sandler, & Ramsay, 1981)
(Kahn, 1979) NSSQ: Norbeck Social Support Questionnaire (Norbeck, Lindsey, & Carrieri, 1981)
(Bowlby, 1980) SSQ:Social Support Questionnaire (Sarason, Levine, Basham, & Sarason, 1983)
(Cohen & McKay, 1984) ISEL: Interpersonal Support Evaluation List (Cohen, Mermelstein, Kamarck, & Hoberman, 1985)
(Lin, Simone, Ensel, & Kuo, 1979) IE: Instrumental-Expressive Scale (Lin et al., 1981)

Table 2.4 Representative Taxonomies of Social Support

PINNEAU (1975)	EMOTIONAL	TANGIBLE	APPRAISAL						
WALKER et al. (1977)	EMOTIONAL	MATERIAL AID & SERVICES			INFORMATION				
GOTTLIEB (1978)	EMOTIONALLY SUSTAINING BEHAVIOURS	ENVIRONMENTAL ACTION	PROBLEM SOLVING BEHAVIOUR	INDIRECT PERSONAL INFLUENCE					
KAHN (1979)	AFFECT	AID				AFFIRMATION			
HIRSCH(1980)	EMOTIONAL	TANGIBLE	COGNITIVE GUIDANCE			SOCIAL REINFORCEMENT	SOCIALISING		
HOUSE (1981)	EMOTIONAL CONCERN	INSTRUMENTAL AID	APPRAISAL		INFORMATION				
SCHAEFER et al. (1981)	EMOTIONAL	TANGIBLE			INFORMATION				
WELLMAN(1985)	EMOTIONAL	SMALL SERVICES		COMPANIONSHIP					
PAGEL et al (1987)	EMOTIONAL	TANGIBLE	COGNITIVE GUIDANCE				SOCIALISING		SELF DISCLOSURE
WELLMAN & WORTLEY (1990)	EMOTION	FINANCIAL AID SMALL SERVICES LARGE SERVICES		COMPANIONSHIP					
WEISS (1974)	ATTACHMENT		GUIDANCE	RELIABLE ALLIANCE		REASSURANCE OF WORTH	SOCIAL INTEGRATION	OPPORTUNITY FOR NURTURANCE	
COBB (1976)	EMOTIONAL			BELONGING	INFORMATION				
SARASON et al.(1983)	ATTACHMENT								
COHEN et al (1985)		TANGIBLE	APPRAISAL	BELONGING		SELF-ESTEEM			

AUTHORS IN BOLD ARE DISCUSSED FURTHER AS REPRESENTATIVE THE THEORY BASED SCALE DEVELOPMENT

Weiss (1974) theorised that six provisions (social functions) were necessary for individuals to feel adequately supported and to avoid loneliness. The six provisions were: attachment; social integration; opportunity for nurturance; reassurance of worth; a sense of reliable alliance; and obtaining of guidance. One of the provisions, opportunity for nurturance defined as "Opportunity for nurturance is provided by relationships in which the adult takes responsibility for the well-being of a child and so can develop a sense of being needed" (p.23) indicated a reciprocal relationship. For Weiss (1974) the social support dimensions did not include physical assistance (tangible aid) which will be found in other models (e.g., Caplan, 1974). Further there no evidence has been presented to argue for an overall orthogonal structure between the six provisions. It is likely that these six provisions are correlated though the theoretical statement remains valid.

ISSI: Interview Schedule for Social Interaction

Henderson (1981; 1980) initially utilised the concept of social provisions proposed by (Weiss, 1974) and the concept of attachment (Bowlby, 1980) to develop an interview based measure of social support. During the development of the scale the "social integration" scale was divided into acquaintanceship and friendship and the concept of help and guidance was dropped. The original aim was to have pairs of scores for each of the six areas, one to measure availability and the other to measure perceived adequacy. Following a structural analysis of the data from a cross-sectional survey the interview schedule was modified. The main findings were that the dimensions of availability and perceived adequacy of attachment, friendship and acquaintanceship could be distinguished empirically and reliably measured. The availability and adequacy of "reliable alliance" and "reassurance of worth" could be distinguished but not measured reliably nor could the dimensions be easily separated from friendship.

Significantly, one factor identified as giving support, that is, the "opportunity for nurturing" was not successfully incorporated into the final scale and was effectively

eliminated from further discussion. A general factor of "social integration" could be formed by combining acquaintanceship, friendship, reassurance of worth and reliable alliance. The dimensions of availability were distinct but the dimensions of perceived adequacy were highly correlated with each other possibly indicating a dominant factor of satisfaction with relationships. The scale was developed using a general population sample of 231 people.

PRQ: Personal Resource Questionnaire

Brandt (1981) also used the concept of social provisions (Weiss, 1974) to develop the Personal Resource Questionnaire, a two part measure that explicitly incorporates support from different sources. However, the PRQ- part 1 is not considered further because no reliability coefficients have been reported. Large intercorrelations between the intimacy, social integration, worth and assistance subscales (.58 - .62) were found indicating some overlap between the subscales.

Medium intercorrelations were found between the nurturance subscale and the other four subscales (.26- .38). It was concluded that there were two distinct theoretical dimensions underlying the PRQ-Part 2: opportunity for nurturance and a combination of intimacy, social integration, worth and assistance. However, as no factor analytic studies were reported in further examination the disaggregation into subscales remains speculative (Weinert, 1984). The original standardisation sample comprised 149 spouses of individuals with multiple sclerosis.

PSR: Provisions of Social Relations

The concept of social provisions was also used by in developing the Provisions of Social Relations (PSR Turner et al., 1983) though they again excluded the "opportunity for nurturing others" provision. A significant finding from their research was that in their factor analytic studies the PSR distinguished the source

of support (family, friends) rather than the "provisions of social relations". The scale was developed using 200 university students.

SPS: Social Provisions Scale

In developing the Social Provisions Scale (Cutrona & Russell, 1987) the six social provisions were divided into two broad categories of assistance related provisions (problem solving; guidance and reliable alliance) and non-assistance related (reassurance of worth; opportunity for nurturance; attachment and social integration). The internal reliability of the Social Provisions Scale was obtained using a population of 1183 students, 303 public school teachers and 306 nurses. A confirmatory factor analysis using LISREL VI specifying a six factor oblique model had a good fit with the data. Correlations of the item loadings on the respective factors were statistically significant and sizeable in magnitude ranging from .39 to .79 indicating that each item adequately represented the construct being assessed. The inter-factor correlations ranged from .54 to .99. They also undertook a second order factor analysis specifying six first order factors and one second order factor was undertaken and again the model was found to provide a good fit to the data. The second order factor loadings for the six first order factors are presented in Table 2.5

Table 2.5 Second-Order Factor Loadings for the social provisions

Provision	Loading
attachment	.91
social integration	.91
reassurance of worth	.81
reliable alliance	.97
guidance	.99
opportunity for nurturance	.62

"We therefore conclude that the Social Provisions Scale assesses both specific components of social support in addition to the overall level of support available

to the person" (Cutrona & Russell, 1987 p.50). Discriminant validity of the SPS was assessed by administering it to 242 college students enrolled in introductory psychology class who completed it with the Social Support Questionnaire (Sarason et al., 1983); the Inventory of Socially Supportive Behaviors (Barrera et al., 1981) The resultant correlations are presented in table 2.6

Table 2.6 SPS correlations with SSQ and ISSB

support measures	correlation
satisfaction with support SSQ(s)	.35***
number of supportive persons SSQ(n)	.40***
number of helping behaviors ISSB	.35***

N=242 ***p<.001

A confirmatory factor analysis was undertaken again using LISREL VI (Jöreskog & Sörbom, 1985) which was unable to support a six factor solution but found that a four factor model accounted for between 82-86% of the variance (Mancini & Blieszner, 1992). Table 2.7 depicts the factor intercorrelations of the scales.

Table 2.7 Factor intercorrelations reported by Mancini and Blieszner (1992)

	Intimacy	Social Integration	Opportunity for Nurturance
Social Integration	.94		
Opportunity for Nurturance	.55	.63	
Reassurance of worth	.79	.91	.60

N=350 all correlations significant p<.001

The above review of the scales based on the concept of social provisions suggests that a component based theory including emotional support (attachment) and social integration are discernible dimensions of social support. Further support for multidimensionality is that the scales used different statements in the labelling of the social provisions.

The source of support was most clearly seen as important in the Provisions of Social Relations scale differentiating between family and friends.

Another component theory of social support defined social support as a matrix formed by an objective-subjective dimension and a tangible-psychological dimension to form four aspects of received social support (Caplan, 1974). He defined objective tangible support as:

> "behavior directed toward providing the person with tangible resources that are hypothesized to benefit his or her mental or physical well-being" (p.85) and objective psychological support as : "behavior directed toward providing the person with cognitions (values, attitudes, beliefs, and perceptions) and toward inducing affective states that are hypothesized to promote well-being" (p.85).

PSS-Fr: Perceived Social Support-Friends / PSS-Fa: Perceived Social Support-Family

Caplan (1974)'s definition was used to develop the Perceived Social Support from friends (PSS-Fr) and Perceived Social Support from family (PSS-Fa) scales to measure perceived social support (Procidano & Heller, 1983). "If networks provide support, information, and feedback (Caplan, 1974) then perceived social support (PSS) can be defined as the extent to which an individual believes that his/her needs for support, information, and feedback are fulfilled (Procidano & Heller, 1983 p.2). The measures distinguish between the people who provide the support (structural) and the functional attributes of social support. Social desirability was positively related to PSS-Fa, $r = .29$, $p < .005$ but unrelated to PSS-Fr. The results of a meta-analytic study led Procidano (1992) to conclude that "One of the clearest results in this study was the distinction between family and friends as sources of support" (p.20). The distinction between sources of support was also reported by Turner (1983) using a different conceptualisation of social support. No factor analytic studies have been reported for the PSS that disaggregate the components within the measures. Scale development was undertaken on 222 university undergraduates (mean age = 19).

ISSB: Inventory of Socially Supportive Behaviors

The Inventory of Socially Supportive Behaviours (ISSB) (Barrera et al., 1981) was developed conceptually from both Caplan(1974)'s formulation of social support:

> "The significant others help the individual mobilize his psychological resources and master his emotional burdens; they share his tasks; and provide him with extra supplies of money, materials, tools, skills, and cognitive guidance to improve his handling of his situation" (p.5-6)

and an empirical classification of helping behaviours developed from interviews with 40 single, low income mothers (Gottlieb, 1978).

The ISSB was explicitly designed to measure globally enacted received support. The original scale was considered as being unidimensional and when originally reported was not divided into subscales (Barrera et al., 1981; Sandler & Barrera, 1984). Subsequently, Barrera and Ainlay (1983) reported a factor analytic study of the ISSB that extracted four factors. They labelled the factors, Directive Guidance; Nondirective Support; Positive Social Interaction and Tangible Assistance. In a further confirmatory factor analysis Stokes & Wilson (1984) also identified four factors but suggested alternative labels for the factors Emotional support; Tangible assistance and material aid; Cognitive information, feedback, and clarification and Guidance with a directive quality. Others researchers have only identified three factors, Emotional support, Tangible assistance and Guidance (McCormick, Siegert, & Walkey, 1987; Pretorius & Diedricks, 1993). The reason for the different factor solutions may, in part, be with the choice of factor rotation. Evidence in support of the latter explanation is given by examining the percentages of common variance accounted for in the various studies. Stokes and Wilson (1983) used a promax rotation in their factor analysis, a procedure which does not assume

statistical independence, and accounted for 43.2% of the variance in the correlation matrix, whereas subsequent analyses have ultimately reported on a varimax rotation and have accounted for upto 76% of the common variance. The scale was originally developed using 71 introductory psychology students.

Another component theory defined social support as "interpersonal transactions that include one or more of the following: the expression of positive affect of one person toward another; the affirmation or endorsement of another person's behaviors, perceptions, or expressed views; the giving of symbolic or material aid to another" (Kahn, 1979 p.85).

NSSQ: Norbeck Social Support Questionnaire

The Norbeck Social Support Questionnaire (NSSQ) used these three components of supportive transactions "affect, affirmation, and aid" p.265" as the basis for their scale development. The measure was developed to assess perceived social support available to the individual. In a further study (Norbeck, Lindsey, & Carrieri, 1983) assessed the concurrent validity the NSSQ using the Personal Resource Questionnaire (Brandt & Weinert, 1981) and found intercorrelations between the scales in the range .37 to .41. Norbeck (1984) reviewed the data to determine the relationship between the subscales (affect, affirmation, aid) or as a composite score for these functional components. When the subscale scores were entered into a hierarchical regression with a measure of life stress the amount of variance accounted for was 19%. When the composite score for functional support was entered then the entire effect for functional support and life stress reduced to 1.9%. The conclusion was that even though the subscales are highly correlated they carry distinct information that is lost in the combination. An alternative explanation is that the scale was unstable as a consequence of containing too few items.

SSQ:Social Support Questionnaire

The explicit use of attachment as the basis for social support definition is found in the development of the Social Support Questionnaire SSQ (Sarason et al., 1983). "Social support is usually defined as the existence or availability of people on whom we can rely, people who let us know that they care about, value, and love us. Bowlby's theory of attachment (1969, 1973, 1980) relies heavily on this interpretation of social support" (p.127).

Social support was conceptualised as having two basic dimensions (a) the perception of others who are available in times of need and (b) satisfaction with the available support. Variation in the applicability of the two dimensions was considered as depending on the personality of the individual. In separate factor analyses for the N and S scales each had a very strong unrotated first factor. The first factor for the N score accounted for 82% of the common variance and for the S score it was 72%. The was a medium correlation between the N and S scales of .34. However, the original scales were developed on a criterion of eliminating items that had low correlations with other items. Hence, there is an inherent bias towards one factor underlying the scale. The validity of the scale may therefore reflect only one aspect of social support given its conceptual base. Further development of the SSQ has been reported (Sarason, Sarason, Hacker, & Basham, 1985) and in particular a short form of the scale containing 6 items has been described which has acceptable psychometric properties commensurate with the 27 item scale (Sarason, Sarason, Shearin, & Pierce, 1987b).

The consistent extraction of one factor suggests that the items tap a central concept rather than a functional component. I.G. Sarason (1987b) concluded: "that the perception that social support is available when needed may be translated into the idea that the perception of being loved and valued is central in the concept of social support, and that this belief may be a counterpart in adult life to the attachment experience in childhood described by Bowlby (1969,1980)...The items ... suggest

that acceptance, affection, and affirmation of personal worth that Bowlby hypothesized as being important in attachment are pertinent also to adults' sense of social support. While supportive others certainly provide a variety of useful functions, conceptualizing important relationships in functional terms as providers of 'services' may produce too narrow a focus for investigative work in the field of social support" (p.507).

ISEL: Interpersonal Support Evaluation List

Cohen and McKay (1984) proposed that social support could be considered in discrete resource terms and not as any one over-arching principle. In essence they describe a series of potential mechanisms which culminate in social support. They identified four areas of support: Appraisal Supports based on cognitive model of stressor appraisal (Lazarus, 1966); Emotional Supports leading one to believe that he or she is loved, esteemed and valued, and/or belongs to a network of communication and mutual obligation (Cobb, 1976) ; Self-Esteem was included on the thesis that low self-regard would influence a person's ability to cope with stressful events (Abramson, Seligman, & Teasdale, 1978) ; and Feelings of Belonging "belonging itself meets needs that are necessary for a normal and healthy life.....Some stressors that can be viewed as depriving someone of the opportunity to fulfill belonging-related needs include bereavement, and life changes such as divorce, retirement, and employment termination. The most effective form of support in cases where a stressor deprives one of feelings of belonging would be relatively intimate interpersonal relationships" (p.260-261).

Cohen, Mermelstein, Kamarck, and Hoberman (Cohen et al., 1985) used the four described areas to produce the Interpersonal Support Evaluation List (ISEL). The scale was developed to measure available perceived social support. Four subscales were originally proposed. A "Tangible" (Instrumental) sub-scale which measures perceived availability of material support; an "Appraisal" (availability of confidants) sub-scale which measures perceived availability of someone to talk to

about problems; the "Self-Esteem" sub-scale which measure the perceived availability of positive comparisons when comparing self with others; and the "Belonging" (social companionship) sub-scale which measures the perceived availability of having access to other people with whom to do things.
In a confirmatory factor analytic study Brookings and Bolton (1988) reported evidence for maintaining the four subscales but also found that an alternative model which comprised one broad second order factor also fitted the data. Sarason et. al. (1987b) noting the large intercorrelations between the subscales suggested that the ISEL measured one construct. However, House and Kahn (House & Kahn, 1985) suggested that the low correlations between the "Tangible" sub-scale and the others indicate that there are two underlying subscales. Schonfeld (1991) in a study using a longitudinal design reported moderate correlations between the tangible, appraisal, and belonging subscales of the ISEL. The ISEL self-esteem sub-scale was found to measure the same construct as the Rosenberg (1965) self-esteem scale.

IESS: Instrumental-Expressive Scales

Lin, Simeone, Ensel and Kuo (1979) proposed that social support is:
"support accessible to an individual through social ties to other individuals, groups, and the larger community" (p.109).

The Instrumental-Expressive Scale Scales (IESS) was developed to measure the "activities and aspects which might provide (or jeopardize) either instrumental or expressive support to the respondent" (Lin et al., 1981 p.78). The scale focused on individuals in crisis and not on the provision of everyday support. A five factor structure (using an orthogonal solution, varimax rotation) identified, (1) monetary problems loading four items; (2) lack of companionship loading six items; (3) demands loading four items; (4) communication problems loading five items, and (5) no children represented by one item. The factor loadings of the items selected for the scales were in the range .62-.87. The instrumental support scale was

constructed from the monetary problems and demands items and the expressive scale from the others. The utility of the IESS is that it appears to identify specific areas of social support rather than the global construct in conflicted relationships. No other information on the IESS has been published. There are significant reservations about the factor loading because of the ratio of items to factors. Generally at least five marker items per factor is a minimum to avoid bloated specifics (Comrey & Lee, 1992 p.226). The scale was developed using a general population sample of 99 adults aged 20 and over (mean age =42 years).

Summary conclusions on the content areas of the reciprocity measure

Three scales report only correlational studies of concurrent validity in their development (Brandt & Weinert, 1981; Norbeck et al., 1981; Procidano & Heller, 1983). For these scales a mixed picture emerges of either one factor or two factors of social support and one scale detecting source of support rather than support provision. Of the seven scales that reported factor analytic results in scale development one detected source of support rather than support provision (PSR Turner et al., 1983). For the remaining six scales: five identified emotional support; tangible support was also identifiable where it was included in the theoretical scheme and social integration (or belonging support/companionship) was identified in four scales. Thus, three areas (emotional, tangible and social integration) will be used to develop the items for the reciprocity measure.

Given the likely correlations what scales will be able to detect them?

An implicit assumption in the studies reviewed in table 2.4 is that people self-report accurately and reliably. In studies that have measured the veridicality of self-report, the correspondence between self-report and independent report has typically been high (e.g. Antonucci & Israel, 1986). However, in the absence of an established literature the present thesis will adopt a multiple determinant approach (Ahadi & Diener, 1989) and population correlations in the order of 0.3 will be

assumed. Consideration of the anticipated size of the correlations is necessary because it will be used to select the scales that are likely to detect the correlations. For comparative purposes the correlations in the social support literature between perceived support and enacted support are in the order of 0.3 and lower (Barrera, 1986; Sandler & Barrera, 1984; Sarason et al., 1990a; Sarason, Shearin, Pierce, & Sarason, 1987a).

However, in reporting the correlations between measures the scheme described by Cohen (1983 p.61) will be used such that correlations are classified as small (0.10); medium (0.30) and large (0.50) with the power criterion of $1-\beta = 0.80$. The ability of a scale to detect an underlying correlational relationship is dependent upon its reliability.

The formula linking the expected observed correlation R and the expected true correlation (Kaplan, 1994) is:

$$R = 0.3\sqrt{r_{11}r_{22}}$$

where R is the expected observed correlation
r_{11} is the reliability of the social support questionnaire
r_{22} is the reliability of the outcome measure
0.3 is the expected true correlation.

Table 2.8 was constructed using the above equation. The table is a simulation using the criterion measures that have been reviewed. The simulation illustrates that for perceived support three scales PSS-Fr/PSS-Fa; SSQ(N)/SSQ(S) and the ISEL, would produce significant ($p < .05$) correlations. The ISEL would potentially fail to detect a relationship with the LCS(I). The total ISSB, a measure of received support, would produce significant correlations with all the criterion measures. The simulation illustrates the significance of internal scale reliability on sensitivity to detect correlational relationships.

Table 2.8 Simulation of the Correlations between Social Support Scales and Criterion Measures for an expected r = 0.30

	CES-D	LCS(I)	LCS(P)	LCS(C)	ROSENBERG	JWS	CogFail	GBJWS
Alpha values	.88	.84	.77	.78	.77	.80	.89	.82
Perceived Social Support								
(Alpha values in brackets)								
ISSI								
Availability of Attachment (.67)	.23	.22	.22	.22	.22	.22	.23	.22
Availability of Social Integration (.71)	.24	.22	.22	.22	.22	.23	.24	.23
PQR								
Attachment (.75)	.24	.21	.23	.23	.23	.23	.25	.24
Social Integration (.61)	.22	.19	.21	.21	.21	.21	.22	.21
SCS								
Attachment (.75)	.24	.21	.23	.23	.23	.23	.24	.23
Social Integration (.67)	.23	.22	.22	.22	.22	.22	.23	.21
PSS-Fr (.88)	.26	.23	.25	.25	.25	.25	.27	.25
PSS-Fa (.90)	.27	.23	.25	.25	.25	.25	.27	.26
NSSQ (not reported)								
SSQ(N) (.97)	.28	.24	.26	.26	.26	.26	.28	.27
SSQ(S) (.94)	.27	.23	.26	.26	.26	.26	.27	.26
ISEL								
Appraisal (.82)	.25	.22	.24	.24	.24	.24	.26	.25
Belonging (.78)	.25	.21	.23	.23	.23	.24	.25	.24
Self-Esteem (.73)	.24	.21	.22	.23	.22	.23	.24	.23
Tangible (.81)	.25	.22	.24	.24	.24	.24	.25	.24
Received Supportive Behaviour								
ISSB (.93)	.27	.23	.25	.26	.25	.26	.27	.26
INSTRU-EXPRESS (not reported)								
Monetary problems								
Demands								
Lack of Companionship								
Communication Problems								
Not having children								

For N = 70 if r = > .23 then p < .05 two-tailed

The initial content of the reciprocity measure would contain items sampling a wide range of reciprocal activities. In order to identify items as part of a scale the criterion measures need to be multidimensional. The criterion measures also need to have acceptable scale reliabilities.

From the review of the literature the SSQ(N)/SSQ(S); ISEL and the ISSB can be seen to have these qualities. While the PSS-Fr/PSS-Fa has the required scale reliability, factor analytic studies indicated a stronger relationship with the sources of support (the *raison d'etre* of the scale) rather than with the functions of social support, and therefore was not included.

Perceived or enacted reciprocity

In the following section the distinction between perceived and enacted support in social support literature will be used by analogy to discuss whether the reciprocity measure is assessing perceived or enacted reciprocity. Typically reciprocity is associated with actual social exchange rather than perceived exchange. The findings with respect to social support suggest that it is perceived social support that is more linked to psychological well-being and distress rather than enacted social support. Similarly it can be argued that perceived reciprocity, the belief that people will reciprocate, is more salient than actual reciprocity based on personal experience. The following summary of research findings while drawn from the social support literature suggests parallels with the concept of reciprocity.

Initially theoretical accounts suggested that individual experience of social support developed through the receipt of advice, aid and affection from interpersonal networks (Abbey, Andrews, & Halman, 1995; Barrera, 1981; Vinokur et al., 1987). When it was discovered that there was no clear link between social relationships and stress buffering (e.g., House & Kahn, 1985) the concept of perceived availability of support resources was developed. Perceived availability of social

support buffers the effects of stress on psychological outcomes (Kessler & McLeod, 1985). A limitation of both concepts is that the contribution of support transactions is not evaluated in response to a stressful event (Wetherington & Kessler, 1986). To assume that the amount or quality of actual support mobilised following exposure to stressors is directly proportional (in amount or quality) to the stressor is questionable. In a study of the interplay between these factors only medium correlations were found between support mobilisation and number of potential supporters ($r = .31$ $n = 308$ $p < .05$); support mobilisation and internal locus of control ($r = .23$ $n = 308$ $p < .05$); support mobilisation and positive health seeking beliefs ($r = .27$ $n = 308$ $p < .05$) (Eckenrode, 1983).

In contrast to perceived support, enacted support has rarely been associated with psychological symptoms (Barrera, 1986; Dunkel-Schetter & Bennett, 1990). Even when received support is associated with psychological symptoms the outcome is not always in the predicted direction. For example, in a study of 64 patients experiencing their "first cardiac event", whose health status was measured over three months post discharge, found that the receipt of informational support prior to illness onset was associated with a *positive* increase in distress ($\beta = .38$; $\Delta R^2 = .10$; $p < .001$), whereas after the "first cardiac event" perceived availability of informational support was associated with a decrease in distress (Helgeson, 1993). The time phase is clearly an important factor. Perceived and enacted support may interact when timing of support is critical, for example, prior to illness perceived support may be significant, but enacted support may be more significant after onset of illness (Schwarzer & Leppin, 1991). In studies where measures of both perceived and received support are included the correlation is typically below $r = .30$ (Brand, Lakey, & Berman, 1995). Similarly perceived equity rather than actual equity has found to be related to marital adjustment (Acitelli, Douvan, & Veroff, 1993). Additional evidence for considering perceived reciprocity comes from another research literature. In keeping track of needs in different types of relationships, people distinguish between communal and exchange relationships in respect of a perceived opportunity to reciprocate (Clark, Mills, & Powell, 1986).

However, no "currency" was suggested for measuring how people keep track of their giving and receiving. Additional support for a perceived reciprocity measure comes from studies that link perceived support and cognitive personality variables to psychological distress by similar processes (Lakey & Cassady, 1990; Lakey, Moineau, & Drew, 1992).

Thus, the model of reciprocity may ultimately be based on the belief that people will reciprocate when the demand arises for the individual. Actual social exchange may not be a necessary prerequisite to the development of reciprocity. The belief that people will reciprocate transcends the vast potential range of individual resource exchanges (e.g., loaning a car to sharing sweets) and would therefore suggest a more general mechanism.

Structural measures

The preceding discussion has concentrated on the functional aspects of social support. In the following section a brief survey of structural measures will be undertaken in order to identify criterion measures. Attempts at integrating the structural and functional aspects of social support have been reported though the results have been mixed (Israel, 1982). Typically links have been sought between structure (e.g., network size; frequency and intensity of interactions) and functions (affective support, tangible aid) of the personal (egocentric) network. Network variables commonly reported include: network size (the number of direct contacts between ego and alters). Network size is usually stable over short periods of time. There are reports of 2-day test-retest correlations of 0.88 for number of people who provide support (Barrera, 1980); 1-week test-retest correlations of 0.91 for family and friendship network size (Fischer, Sollie, & Morrow, 1986); 3-4 week test-retest correlations of 0.85 using the short form SSQ(N) (Sarason et al., 1987b) and 0.8 using a role-relation name generator (van Groenou, van Sonderen, & Ormel, 1990). Several studies have shown that large networks (those that contain 20 or more active ties) are generally supportive

(Barrera, 1981; Fischer, Sollie, Sorell, & Green, 1989; Seeman & Berkman, 1988; Wellman & Wortley, 1990) and especially for women (Sarason, Sarason, & Shearin, 1986). Other researchers have found that larger networks are also more likely to result more interpersonal problems (Riley & Eckenrode, 1986) and have found a curvilinear relationship between confidants and overall network satisfaction (Stokes, 1983).

Another frequently reported structural measure is that of network density (the proportion of people who could know each other to that of those who do not know each other or as the total number of relationships that exist among members of an individual's social network as a proportion of the total possible number of such relationships excluding the links with the individual (Mitchell, 1969). Density is usually calculated to be in the range of 1.00 where all members of the network have contact with each other to 0.0 where none of the members have contact with each other. By definition density varies directly with degree and inversely with size (Neimeijer, 1973). As a consequence of these relationships meaningful interpretation of density requires that network size is kept constant. The density of active and intimate networks ranges from 0.3 - 0.5, that is, fewer than half of all potential ties among network members actually exist (Wellman et al., 1988). Density is related to social support through the assumption that social integration promotes mental health. Socially integrated individuals should experience less stress and receive more support to cope with the stress that they do experience (Thoits, 1982). The interpretation of the research evidence on density and social support is complex. High density networks have been associated with high degrees of perceived support but also with low satisfaction (Walker, MacBride, & Vachon, 1977). Low density networks have been positively associated with the communication of new information and the development of new social contacts (Granovetter, 1973). College students in low density social networks were significantly more satisfied with emotional support received than were students in high density social networks (Hirsch, 1979). In a subsequent study with women aged 30+ who were returning to full-time education and recently bereaved women

(with husband less than 60 years old at death) a similar picture emerged (Hirsch, 1980). Denser social networks were associated with significantly less satisfaction with socialising, emotional support and cognitive guidance. "While perhaps less a cultural ideal, a low density, multidimensional natural support system nonetheless emerges from this study as more adaptive (Hirsch, 1980 p.169). It is hypothesised that in low density social networks reciprocity has a higher correlation with perceived social support. Conversely in high density social networks reciprocity has a lower correlation with perceived social support. These hypotheses appear at first sight to be counterintuitive. However, in low density social networks there are potentially more individuals with whom more than one social support resource can be exchanged (multiplex relations). In high density social networks there are likely to be more uniplex relations. Given that it is easier to reciprocate in multiplex relationships than in uniplex relationships there is a higher correlation with perceived social support in low density social networks.

DISCUSSION

There is widespread use of reciprocity as an explanatory concept in the social support literature. There is, however, little consensus on the measurement of reciprocity. From a theoretical perspective the concept of reciprocity may relate more to the belief that people reciprocate as opposed to actual instances of exchange.

A reciprocity measure should focus on at least two support dimensions and have several marker items to identify the dimensions. The standardisation population would be non-clinical. The reciprocity measure would be anticipated to link with basic structural characteristics of social networks of network size and network density. The measure would potentially provide a "currency" index of the various support dimensions. Potentially it should allow for determining the equivalence

between different functional support dimensions.

The over-arching hypothesis of the present thesis is that reciprocity correlates with social support resources, network size and network density thus provides a linkage between functional and structural aspects of social support.

Chapter 3 Identifying the dimensions for the Reciprocity measure

INTRODUCTION

One principal finding in the review undertaken in Chapter 2 of the small reciprocity literature is that there is no consistently employed or psychometrically robust reciprocity measure. Different measures of reciprocity are also used within the same research area. The measures have large variations in their psychometric properties. In many of the studies the lack of an explicit underlying theory further limits the generalisability of the results. In the absence of any specific theory reciprocity is generally conceptualised as support exchange between two individuals. Thus, the effects of the social network are not generally considered. In contrast, measures of social support generally require the respondent to focus on the perceptions of support across the entire social network. The Quality of Relationships inventory is a notable exception in that it asks questions about specific relationships (Pierce, Sarason, & Sarason, 1991).

Chapter two identified the criterion scales for the reciprocity measure on the basis of a theoretical review of their origins and initial standardisation data. The focus of the present chapter is to examine the dimensionality of these existing social support scales. The first study is both a confirmatory factor analysis of these selected existing social support scales and an examination of their inter-relationships.

Are the facets of support received, as defined by the factor labels, found empirically in the social support scales? If this is the case then the items loading onto the factors should be identifiable with their labels. For example, an item indicating the provision of money would be likely to have a higher salient loading on a factor labeled *financial support* than on a factor labeled *self-esteem.* If the factor labels are consistent with the social support scale structure then they can be used to generate the items for a reciprocity measure. It is important to identify the factor labels

because although reciprocity is considered as support exchange it is not assumed to be equivalent to social support. Though there have been theoretical statements that suggest the equivalence of reciprocity and social support (e.g., Shumaker & Brownell, 1984) all of the support scales in the public domain continue to measure received support. Taking an existing scale of received social support and rewording the items assumes that received social support is equivalent to provided social support (e.g., Jung, 1990). Evidence to suggest it is an unwarranted assumption comes from studies showing that while perceived similarity is a strongest predictor of marital well-being the content of that similarity is gender specific (Acitelli et al., 1993). However, there is evidence to suggest that the facets of support received are the same as those provided (Helgeson & Cohen, 1996). Thus, while reciprocity is a social transaction the exchange contents need not necessarily be identical.

The simulation in chapter 2 demonstrated that three social support scales would be able to detect a correlation of 0.3. These were the *Interpersonal Support Evaluation List* (ISEL: Cohen et al., 1985); *Inventory of Socially Supportive Behaviors* (ISSB: Barrera et al., 1981); *Social Support Questionnaire* (SSQ: Sarason et al., 1983). Comprehensive psychometric data is not available for the *Instrumental-Expressive Support Scale* (IESS: Lin et al., 1981) though both Tardy (1985) and Heitzmann and Kaplan (1988) note its existence. The IESS has been included because it is one of the few scales that does not assume social support to have universally positive effects (Pagel, Erdly, & Becker, 1987; Rook, 1992). The IESS has a scale label for problems with receiving support. A summary of the four scales selected is given in table 3.1. While new scales continue to be reported (e.g., Zimet, Powell, Farley, Werkman, & Berkoff, 1990) few comparative psychometric studies using factor analytic and/or correlational analyses to determine scale structures are reported. The lack of such studies is a consequence of researchers tending to develop their own social support scale based on different theoretical interests and hence, a lack of consensus on the meaning of social support.

The second aim of the present chapter was the examination of perceived social support within the standardisation population. In chapter 2 the review highlighted the range of populations had been used to study reciprocity. It was argued that

older and clinical populations were not appropriate for the development of a reciprocity measure. The review suggested the use of a non-clinical population that had experienced a significant social network disruption would be appropriate. Following such a disruption individuals engage in reciprocal behaviour in order to re-establish their social networks (Hays & Oxley, 1986). The use of people who had physically relocated as a consequence of job change would constitute such a population. However, initial scale development requires a considerable number of participants who have encountered similar experiences. It would be difficult to find sufficient numbers of participants matched on both personal characteristics and circumstances who were moving as a result of a change of job.
Students in their first term at university are a population who are selected both on common personal characteristics and circumstances. There are two potential difficulties with the use of such a population in developing a measure of reciprocity. The first is that the population is typically unrepresentative of the general population (e.g., in terms of IQ; socioeconomic status; personality variables). Student populations are typically used in all preliminary scale developments. Subsequently the scales are then adjusted for use in other populations. The second difficulty is more significant. The level of psychological distress resulting from the transition may impair the individual's ability to engage in social activity. Fisher and Hood (1987) have suggested 'homesickness' defined as a "complex cognitive-motivational-emotional state concerned with grieving for, yearning for and being preoccupied with thoughts of home (p.426)" as one psychologically distressing effect.

Three overlapping hypotheses have been proposed to explain homesickness. Two contrasting hypotheses suggest that previous experience of high mobility is either predictive of poor adaptation the *Vulnerability hypothesis*: (Stokols, Schumaker, & Martinez, 1983) or is not the *Immunization hypothesis*: (Fisher, Frazer, & Murray, 1986). A third hypothesis, the *Selective vulnerability hypothesis*: (Fisher & Hood, 1988) suggests that similar previous moves are potentially beneficial because through them students will have acquired coping resources. A fourth the *Social*

disruption hypothesis, that focuses not on mobility but on the loss of social support could also account for the extant findings. Relocation involves a change in the social network of both structure and the functional quality/quantity of the support provided (Hirsch, 1979; Laireiter & Baumann, 1992; Wellman et al., 1988). Thus, social network disruption would be expected to lead to higher levels of reported stress. Fisher and Hood (1988) predictably reported that both home and non-home based groups had similar levels of difficulties with academic work (65% and 61% respectively). However, only 24% of the home-based students self-reported social problems as a main source of stress compared with 45% of the students who had relocated. Given that perceived social support has been shown to have a stronger correlation with measures of well-being as compared with enacted social support (Pierce, Sarason, & Sarason, 1992) those students with high perceived social support would be expected to report lower levels of homesickness. Additional evidence for the inclusion of perceived social support in an account of homesickness is found in a longitudinal study undertaken by Brewin, Furnham & Howes (Brewin, Furnham, & Howes, 1989). They found that homesickness was predicted by greater self-reported dependency on other people and by higher estimates of the frequency of homesickness among students overall. In the study homesickness was measured using the Dundee Relocation Inventory (Fisher, 1989).
In summary, the present chapter has two major hypotheses:
1) That the labels given to the factors in the existing scales map the identified factor structure;
and that 2) that homesickness is not related to the effects of relocation in the student population.

METHOD

Participants

Participants were 125 first year psychology undergraduates and speech and language students. A method for calculating the number of participants for factor

analytic studies has been given by Baggaley (1982) the number of scale items (p) and approximate mean correlation is known between the items (Q). For the present study the maximum number of items in any scale was 40 (N).
Using an assumed mean correlation of 0.3 (Q), inspection of a table provided by Baggaley (1982) gives a ratio N/p = 2.15. But p=40 therefore the optimum number of participants is 86. The age range was 19-30 years. 92 were female respondents (75 per cent). There were two completely unusable questionnaires.

Table 3. 1 Summary of Social Support Measures

Scale author	Title	Response scale	Reliability	Validity
Cohen, Mermelstein Kamarch, & Hoberman (1983;1985)	Interpersonal Support Evaluation List	4 point likert scale "definitely true..definitely false" 40 items	Test-retest 4 week interval=.87 2 day interval=.87	No correlation with Marlowe-Crowne Scale Negatively correlated with measures of physical and psychological symptoms
Barrera (1981)	Inventory of Socially Supportive Behaviors	5 point likert scale measuring frequency of behaviour received 40 items	Test-retest =.88	No data available
I.G. Sarason, Levine Basham, & B.R. Sarason (1983)	Social Support Questionnaire	List upto 9 people in two parts: 1. names of individuals who can offer support; 2. degree of satisfaction with support 27 items	Test-retest 4 week interval: SSQ(N)=.90 SSQ(S) =.83	No correlation with Marlowe-Crowne Scale Negatively correlated with measures of psychological distress
Lin, Dean & Ensel (1981)	Instrumental Expressive scale	5 point likert scale measuring frequency 26 items	No data available	No data available

Instruments

The following section provides a summary of the scaling methods and item content of the selected social support scales:

1. The *Interpersonal Support Evaluation List* (ISEL) consists of 40 items and measures perceived available social support. Participants use a four point scale labeled definitely true to definitely false. Four subscales were originally proposed. A *"Tangible"* (Instrumental) sub-scale which measures perceived availability of material support; "There is no-one I could call on if I needed to borrow a car for a few hours"; an *"Appraisal"* (availability of confidants) sub-scale which measures perceived availability of someone to talk to about problems; "There is at least one person I know whose advice I really trust" ; a *"Self-Esteem"* sub-scale which measure the perceived availability of positive comparisons when comparing self with others; I am able to do things as well as most other people"; and a *"Belonging"* (social companionship) sub-scale which measures the perceived availability of having access to other people with whom to do things; ""When I feel lonely, there are several people I could call and talk to".

2. The *Inventory of Socially Supportive Behaviours* (ISSB) consists of 40 items and measures enacted support. Respondents rate the frequency with which each item occurred in the preceding month using a five-point scale. Examples of included items are "Loaned or gave you something (a physical object other than money) that you needed" and "Gave you some information to help you understand a situation you were in".

3. The *Social Support Questionnaire* (SSQ) has 54 items divided into two parts each with 27 items and measures perceived social support. The scale has two dimensions 1) the perception that there is a sufficient number of available others to whom one can turn to in times of need (N), and 2) degree of satisfaction with the available support (S). For each question respondents list up to nine individuals in the

personal social network and then indicate their overall level of satisfaction with the support received on a six-point scale. Examples of included items are "Whom can you really count on to help you feel more relaxed when you are under pressure or tense?" and "Whom can you really count on to support you in major decisions you make?".

4. The *Instrumental-Expressive Scale Scales* (IESS comprise 26 items which respondents rate on a four-point scale as to the frequency of problems experienced over the past six months. Examples of included items are "Having problems managing money "(instrumental) and " Not having someone who shows you love and affection " (expressive).

The two other measures used were:

5. The *Dundee Relocation Inventory* (DRI) a measure of homesickness developed by Fisher (1989) predominantly with student populations.The scale comprises 26 items which respondents rate on a three category rating scale. Negative items are reversed when scoring. Low scores are indicative of homesickness. No alpha coefficients were reported. Examples of items include "I regret having moved here" and "I feel excited about work here".

6. The *General Health Questionnaire* (GHQ-60) The questionnaire is used to detect the presence of the psychological components of ill health in community settings (Goldberg, 1978).

Procedure

Each participant anonymously completed a pack containing four self-report questionnaires in their first term at university. The order of questionnaire presentation was randomised. The students participated voluntarily as part of a

laboratory class. Group debriefing occurred at a future class.

RESULTS

The purpose of the current analysis is to compare the specified dimensional structures as reported by the scale authors with the results obtained in the present study. (All reported analyses were undertaken using SPSS for Windows).

The presentation format of the factor analytic results has been designed to highlight the differences in factor loadings. Accordingly, the scale items are as listed in the original social support measure and the factor loadings given accordingly. In addition, for factor identification and correlational analysis the original scale scoring is maintained. All factor analyses used principal components analysis. Where there is an expectation of wide variation among the items as to their communalities, the principal component solution tends towards a more distinctive procedure (Gorsuch, 1983). The Varimax procedure is designed to maximise the variance of the squared loadings for each column of correlation coefficients (Comrey & Lee, 1992) thus enhancing the interpretableness of each factor. The Varimax procedure was used as the primary rotation for all the scales reviewed. The *scree test* was used as the criterion for factor extraction: "Empirically and inductively, the best rule seems to be that the upper end of the scree marks the (k + 1) factor when the true number of the factors is k (Cattell, 1978pp.78-79; Zwick & Velicer, 1982)". In keeping with common usage only loadings having values of ± 0.3 or greater are taken as salient (Comrey & Lee, 1992; Gorsuch, 1983) although scale developers have suggested a more conservative value of ± 0.4 (e.g., Barrera & Ainlay, 1983) .

(1) Scale by scale factor analysis

1.ISEL A four factor solution was specified for the ISEL using a varimax rotation.

The factor loadings for the items are presented in table 3.4. The scale statistics are summarised in table 3.2. (An oblimin rotation failed to converge). Fig. 3.1 gives the associated scree chart.

Inspection of fig. 3.1 suggests that there are between five to six factors that can be extracted.

Table 3.2 Summary Scale Statistics

SCALE	α value	no. of items	eigenvalue	% variance
ISEL	.85	40		
1. Belonging	.78	10	6.49	16.2
2. Self-Esteem	.62	10	2.62	6.5
3. Appraisal	.67	10	2.34	5.9
4. Tangible	.57	10	1.99	5.0
ISSB	.92	40		
1. Guidance	.86	14	10.92	27.3
2. Emotional	.90	14	3.11	7.8
3. Tangible	.74	12	2.57	6.4
SSQ(N) full scale	.97	27	15.57	57.7
SSQ(N) short form	.92	6	4.37	72.9
SSQ(S) full scale	.95	27	12.93	47.9
SSQ(S) short form	.85	6	3.53	58.9
IESS	.82	26		
1. Social Companionship	.85	9	6.28	24.1
2. Monetary Problems	.72	5	2.52	9.7
3. Family Problems	.67	6	2.32	8.9

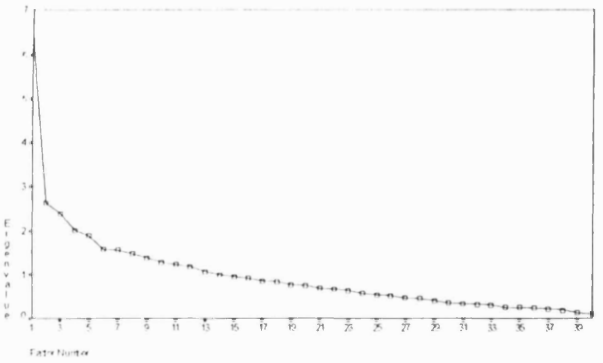

Figure 3.1 Scree chart for ISEL

The first factor identified had an eigenvalue of 6.49, accounted for 16.2% of the common variance. Nine items (loading greater than .30) mapped onto the original *Belonging* subscale. The second factor had an eigenvalue of 2.62, accounted for 6.5% of the common variance. Three items (loading greater than .30) mapped onto the original *Self-Esteem* subscale. The third factor had an eigenvalue of 2.34, accounted for 5.9% of the common variance. Five items (loading greater than .30) mapped onto the original *Appraisal* subscale. The fourth factor had an eigenvalue of 1.99, accounted for 5% of the common variance. Seven items (loading greater than .30) mapped onto the original *Tangible* subscale.

In total the four factors accounted for 33.6% of the total common variance. Factor loadings were noticeably lower on the *Self-Esteem* subscale. In order to determine the relationship between the current study factors and the original scale scoring zero order correlations were calculated between them. The correlations are given in table 3.3. There are large correlations between the factors. All subsequent analyses used the original factor structure.

Table 3.3 Correlations between the factor scores and original scale scoring

Factorapp - Appraisal	.87
Factorbel - Belonging	.99
Factorsel - Self-Esteem	.65
Factortang - Tangible	.94

N = 123 all correlations $p < .001$

The currently reported intercorrelations between the total scale and subscales are presented with data in table 3.5. For comparison the published data, typically by

the scale author(s), is also presented. Mean correlations calculated across the eight studies were also calculated. Inspection of table 3.5 indicates that the present study supports previous studies in reporting the presence of large correlations (mean r = .66; range r = .58 - .78) between the *Belonging* and *Self-esteem* sub-scales. A large correlation was found between the *Belonging* and *Tangible* subscales (mean r = .57; range r = .22 - .81) though the range was considerable. A large correlation was also found between the *Belonging* and *Appraisal* subscales (mean r = .66; range r = .55 - .90). A medium correlation (mean r = .45; range r = .22 - .53) between the *Tangible* sub-scale and both the *Self-esteem* and *Appraisal* subscales suggests that there are two dimensions within the ISEL. The results presented by Sarason et al., (1987a) for the female sample (e.g., *self-esteem* and *tangible* r = .81) are strikingly dissimilar to the other studies and cannot be entirely attributed to a sex difference when compared with the female sample reported by Schonfeld (1991). The women differed markedly in age and when compared to the male sample in Sarason et al., (1987a) showed similar patterns to the other comparison studies. Thus, there may be a sex X age interaction effect accounting for the disparity in the absence of any other available explanation. In summary the previous statements about the dimensionality of the ISEL as *tangible* and *belonging* (e.g., House & Kahn, 1985) are confirmed though in the present study the low scale alpha for the *tangible* subscale would also attenuate the correlations. It was not possible in subsequent factor analyses (using various rotations) to identify the two factors as *tangible* and *belonging*.

Table 3.4 ISEL (Belonging; Self-Esteem; Appraisal; Tangible)

		Factors			
		I	II	III	IV
3.	When I feel lonely, there are several people...	.57			
5.	I regularly meet or talk with members of my family	.62		.31	
9.	I feel that I'm on the fringe in my circle of friends	.55	.40		
13.	Most people I know don't enjoy the same things that I do	.34	.32		
15.	I don't often get invited to do things with others	.47	.47		
19.	If I wanted to have lunch with someone, I could easily	.33	.34	.34	
25.	If I decide on a Friday pm that I would like to go movie	.53			.35
27.	If I wanted to go out of town I would have a hard time	.30	.35	.31	
37.	There are several different people with whom I enjoy				
39.	No one I know would throw a birthday party for me	.56			
2.	I am more satisfied with my life than most people are	.42			
6.	I think that my friends feel that I'm not good at helping				
18.	I have a hard time keeping pace with my friends	.56			
20.	In general, people don't have much confidence in me	.32	.46		
21.	I am closer to my friends than most people				
28.	My friends are more successful at making changes			.44	
29.	Most of my friends are more interesting than I am			.41	
30.	I am able to do things as well as most other people			.41	-.38
31.	Most people I know think highly of me	.41	.32		
40.	I have someone who takes pride in my accomplishments		.53		
4.	At least one person I know whose advice I really trust		.53		
7.	No one with whom I can share my private worries			.60	
8.	In a family crisis arose, few friends able to give advice			.58	
10.	Really no-one I can trust to give me good financial advice		.38		
12.	There is really no-one who can give me objective feedback			.57	
14.	Someone I could turn to for advice about changing my job		.61		
16.	Need suggestions for how to deal with a personal problem		.61		
24.	Someone I could turn to for advice about handling hassles		.69		
36.	Very few people I trust to help solve my problems		.43	.48	
38.	Someone who I feel comfortable going to for advice about	.34		.37	.33
1.	If I had an important letter to send there is someone who				
11.	If I were sick, there would be almost no one to help with	.33			.48
17.	If I needed an emergency loan of £100 there is someone				.39
22.	If I were put in jail there is someone I could call on to bail	.46			
23.	If I needed help in moving to a new home I would have a		.46		
26.	If I needed a ride to an airport very early in the morning I				.48
32.	If I were sick and needed to see a doctor I would have				.42
33.	There is no-one I could call on if I needed to borrow a car				.55
34.	If I got stranded 10 miles out of town someone would come				.69
35.	If I had to leave town for a few weeks someone would look				.40

Table 3.5 Intercorrelations of ISEL subscales

	Cohen et al..(1985) N=64 Mixed			Cohen et al.,(1985) N=216 Mixed			Cohen et al.,(1985) N=32 Mixed			Cohen et al.,(1985) N=31 Female		
1.Self-esteem												
2.Belonging	.61			.64			.61			.78		
3.Appraisal	.50	.56		.48	.53		.67	.73		.51	.76	
4.Tangible	.46	.61	.40	.46	.59	.50	.33	.70	.31	.76	.81	.44

No significance values given for the above correlations

	Sarason et al.,(1987) N=57-59 Female			Sarason et al.,(1987) N=57-59 Male			Schonfeld (1991) N=125 Female			Current Study N=123 Mixed		
1.Self-esteem												
2.Belonging	.72			.70			.60			.58		
3.Appraisal	.90	.90		.52	.66		.34	.58		.33	.55	
4.Tangible	.61	.70	.81	.29*	.22†	.42	.41	.60	.53	.29	.32	.22

All above correlations significant at $p < .001$, except *$p < .05$, two-tailed, and †n.s.

2.ISSB

Three main factors were extracted using a varimax rotation. The factor loadings for the items are presented in table 3.6 with the original factor structure indicated by the graphic line. The scale statistics are summarised in table 3.2. The scree chart is given in Fig. 3.2.

Table 3.6 ISSB (Guidance;Emotional Support;Tangible Assistance)

Item		Factors		
		I	II	III
5.	Told you what s/he did in a similar situation	.67		
12.	Assisted you in setting a goal for yourself	.45	.62	
13.	Made it clear what was expected of you	.51	.31	
15.	Gave you information on how to do something	.66		
16.	Suggested action that you take	.64		
19.	Information to understand situation	.54	.34	
21.	Checked with you to see if you followed advice	.41		.42
23.	Helped you understand why you didn't do something well	.55		.36
27.	Said things that made your situation clearer	.65		
28.	Told you how s/he felt in a similar situation	.57		
32.	Told you who you should see for assistance	.49		.32
33.	Told you what to expect in a situation	.31	.32	
35.	Taught you how to do something	.54		
36.	Gave you feedback on how you were doing	.38		
2.	(Physically) with you in a stressful situation		.53	
6.	Activity with you to get your mind off things	.46	.50	
7.	Talked with you about some interest of yours	.51		
8.	Let you know you did something well	.52		
10.	Told you that you are OK just the way you are	.30	.62	
11.	Told you that s/he would keep things you talk about private		.71	
14.	Expressed respect for competency of yours	.43	.54	
18.	Comforted you by showing some physical affection		.61	
24.	Listened to you talk about your private feelings	.34	.65	
26.	Agreed that what you wanted to do was right	.46	.36	
29.	Let you know that s/he will always be around		.74	
30.	Expressed interest in your well-being		.68	
31.	Told you that s/he feels very close to you		.78	
37.	Joked to try to cheer you up		.59	
1.	Looked after a family member			
3.	Provided you with a place to get away		.50	
4.	Watched after you possessions			.41
9.	Went with you to someone who could take action		.44	.35
17.	Gave you over £25			.64
20.	Provided you with some transportation			.66
22.	Gave you under £25			.76
25.	Loaned or gave you something that you needed	.40		.30
34.	Loaned you over £25			.57
38.	Provided a place to stay		.45	.44
39.	Pitched in to help you do something		.54	
40.	Loaned you under £25			.52

The first factor identified had an eigenvalue of 10.92, accounted for 27.3% of the common variance. Fourteen items (loading greater than 0.3) mapped onto the original *Guidance* subscale. The second factor identified had an eigenvalue of 3.11, accounted for 7.8% of the common variance. Eleven items (loading greater than 0.3) mapped onto the original *Emotional* subscale. The third factor had an eigenvalue of 2.57, accounted for 6.4% of the common variance. Nine items (loading greater than 0.3) mapped onto the original *Tangible* subscale. The three

factors combined accounted for 41.5% of the common variance. The current intercorrelations between the total scale and subscales and previously published data are presented in table 3.7. Inspection of table 3.7 shows correlations in the range (r= .21 - .60) between the *Tangible* sub-scale and the other sub-scales indicating that potentially this is a separate dimension. The large correlation (r= .71) between the *Emotional* and *Guidance* sub-scales in the present study using a three factor solution suggests that they are measuring a similar construct.

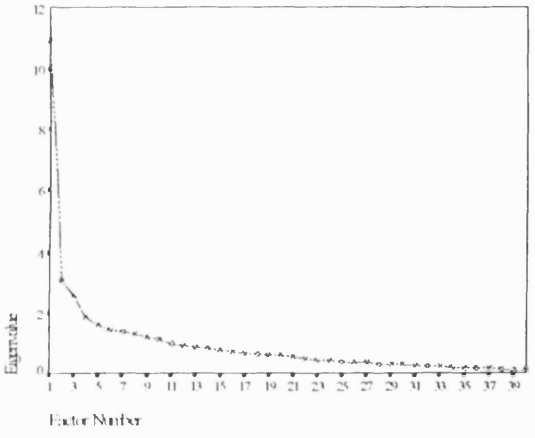

Figure 3.2 Scree chart for the ISSB

However, in the four factor solutions reported (Stokes & Wilson, 1984; Sarason et al., (1987) there are small to medium correlations reported (r = .30 - .50) between the *Emotional* and *Guidance* sub-scales. Visual inspection of the items of both factor structures indicates that the items loading under *Cognitive* in the four factor solutions load under *Guidance* in the three factor solution.

Table 3.7 Intercorrelations of the ISSB sub-scales

Stokes & Wilson (1984) N = 179			
1. Emotional			
2. Tangible	*.21*		
3. Cognitive Information	*.38*	*.26*	
4. Guidance	*.30*	*.25*	*.38*
Sarason et al. (1987) N = 194-206			
1. Emotional			
2. Tangible	.44		
3. Cognitive Information	.62	.49	
4. Guidance	.50	.60	.74
Current Study[a] N = 123			
1. Emotional			
2. Tangible	.48		
3. Guidance	.71	.53	

All correlations $p < .001$, two-tailed except for italics where no significance level given [a]three factors specified

3.SSQ(N) full scale

One factor was identifiable and all items in the principal components factor matrix had loadings > .63. The unrotated items are presented in table 3.8 and the scale statistics are summarised in table 3.2. The factor had an eigenvalue of 15.57 and accounted for 57.7% of the common variance. The scree chart is given at Fig. 3.3.

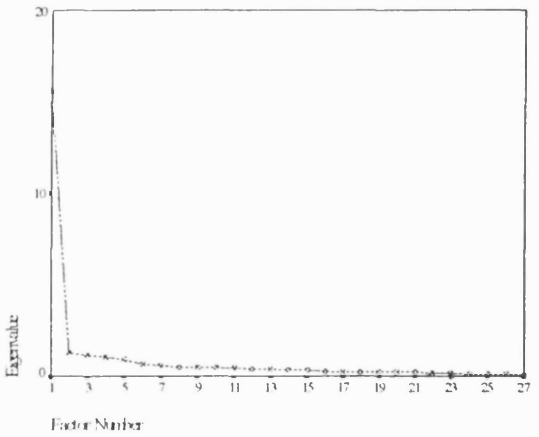

Figure 3.3 Scree chart for the SSQ(N)

Table 3.8 Loadings of items on the unrotated Factor Matrix of the SSQ(N)

*20. Whom can you really count on to care about you regardless	.87
7. Who helps you feel that you have truly something positive to contribute	.83
9. Whom can you really count on to be dependable when you need help	.83
*25, Whom can you count on to console you when you are very upset	.83
*17. Whom can you really count on to help you feel more relaxed	.82
*23. Whom can you really count on to help you feel better	.82
5. Whom could you really count on to help out in a crisis situation	.81
13. Whom can you count on to give you useful suggestions	.80
21. Whom can you really count on to listen to you when you are very angry	.80
*8. Whom can you really count on to distract you from worries	.79
12. Whom do you feel really appreciates you as a person	.78
26. Whom can you really count on to support you in major decisions in your life	.77
15. Who will comfort you when you need it by holding you in their arms	.76
*19. Who accepts you totally, including both your worst and best points	.76
22. Whom can you really count on to tell you, in a thoughtful manner, you	.76
10. Whom could you count on to help you out if you had been fired from	.74
18. Whom do you feel would help if a family member died	.73
27. Whom can your really count on to help you feel better when you are irritable	.73
16. Whom do you feel would help if a good friend had a car accident	.72
4. Whom do you feel would help you if you were married and then separated	.71
3. Whose lives do you feel that you are an important part of	.70
2. Whom could you really count on if a good friend insulted you	.69
14. Whom can you count on to listen openly and uncritically to your feelings	.67
6. Whom can you talk with frankly, without having to watch what you say	.67
11. With whom can you be totally yourself	.65
1. Whom can you really count on to listen to you when you need to talk	.64
24. Whom do you feel truly loves you deeply	.64

* items are those that comprise the short form of the SSQ(N)

3a SSQ(N) short form

The six item scale (Sarason et al., 1987b) had one factor which had an eigenvalue of 4.37 and accounted for 72.9% of the common variance. Cronbach's alpha for the scale was .92.

4. SSQ(S) full scale

One factor was identifiable and all items in the principal factor matrix had loadings > .51. The unrotated items are presented in table 3.9 and the scale statistics are summarised in table 3.2. The scree chart is given at Fig. 3.4. The factor had an eigenvalue of 12.92 and accounted for 47.9% of the common variance. Cronbach's alpha for the scale was .95.

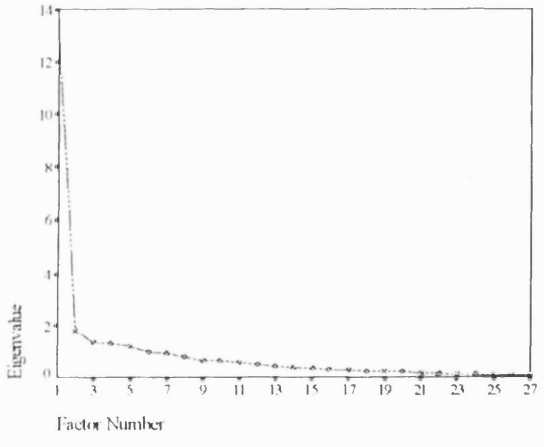

Figure 3.4 Scree chart for the SSQ(Q)

Table 3.9 Loadings of items on the unrotated Factor Matrix of the SSQ(S)

5. Whom could you really count on to help out in a crisis situation	.81
12. Whom do you feel really appreciates you as a person	.79
*19. Who accepts you totally, including both your worst and best points	.79
9. Whom can you really count on to be dependable when you need help	.77
16. Whom do you feel would help if a good friend had a car accident	.77
18. Whom do you feel would help if a family member died	.77
*20. Whom can you really count on to care about you regardless	.76
13. Whom can you count on to give you useful suggestions	.75
*23. Whom can you really count on to help you feel better	.75
15. Who will comfort you when you need it by holding you in their arms	.74
21. Whom can you really count on to listen to you when you are very angry	.74
*25, Whom can you count on to console you when you are very upset	.74
10. Whom could you count on to help you out if you had been fired from	.73
7. Who helps you feel that you have truly something positive to contribute	.72
*17. Whom can you really count on to help you feel more relaxed	.70
27. Whom can your really count on to help you feel better when you are irritable	.70
11. With whom can you be totally yourself	.69
3. Whose lives do you feel that you are an important part of	.68
22. Whom can you really count on to tell you, in a thoughtful manner, you	.66
26. Whom can you really count on to support you in major decisions in your life	.61
24. Whom do you feel truly loves you deeply	.60
*8. Whom can you really count on to distract you from worries	.58
14. Whom can you count on to listen openly and uncritically to your feelings	.54
4. Whom do you feel would help you if you were married and then separated	.52
6. Whom can you talk with frankly, without having to watch what you say	.50
2. Whom could you really count on if a good friend insulted you	.48
1. Whom can you really count on to listen to you when you need to talk	.43

* items are those that comprise the form of the SSQ(S)

4a SSQ(S) short form

The six item scale had one factor which had an eigenvalue of 3.53 and accounted for 58.9% of the common variance. Cronbach's alpha for the scale was .85.

The correlation between the full scale SSQ(N) and SSQ(S) was .44. The correlation between the short form SSQ(N) and SSQ(S) was .50. Correlations between the full scale and short form SSQ(N) and SSQ(S) were .95 and .94 respectively.

5. IEES

A factor analysis specifying five main factors was undertaken using a varimax rotation. The rotated items are presented in table 3.10. The scale statistics are summarised in table 3.2. The scree chart is given at figure 3.5. Inspection of figure 3.5

suggests that seven to eight factors could be extracted. The first factor identified had an eigenvalue of 6.28, accounted for 24.1% of the common variance. Five items (loadings greater than .30) mapped onto the original *Lack of Social Companionship* subscale. The second factor had an eigenvalue of 2.52, accounted for 9.7% of the common variance. Four items (loadings greater than .30) mapped onto the original *Monetary Problems* subscale. The third factor had an eigenvalue of 2.32, accounted for 8.9% of the common variance. Two items (loadings greater than .30) mapped onto the original *Communication Problems* subscale.

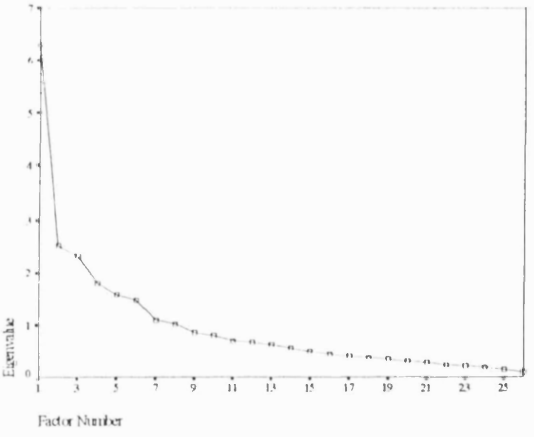

Figure 3.5 Scree chart for the IESS

The fourth factor had an eigenvalue of 1.79, accounted for 6.9% of the common variance. Three items (loadings greater than .30) mapped onto the original *Demands* subscale. The fifth factor comprised of two items, had an eigenvalue of 1.58, accounted for 6.1% of the common variance. No items loaded on the original *children* subscale. The total common variance accounted for was 55.8%. The values of Cronbach's alpha ranged between .85 - .63.The final two subscales were in the lower range of scale acceptability and were therefore not employed in future analyses. Intercorrelations between the total scale and subscales ranged between .82 - .09.

Table 3.10 Factor Structure of the IESS (Companionship; Monetary Problems; Communication problems; Demands; Unnamed Factor) + items that did not load in the original study

Scale Items	Factors				
	I	II	III	IV	V
1. Having problems managing money		.42			-.43
9. Deciding on how to spend money		.59			
12. Not having enough money to do the things you want		.77			
16. Not having enough money to get by on	.75				
3. Having too many responsibilities				.74	
4. Not having people you can depend on	.72		.30		
5. Too many demands on your time				.54	
6. Not having a satisfactory sex life	.36			-.36	
2. Not having a close companion	.75			.37	
17. Dissatisfied with your marital status (single, married)	.33		.53		
18. Not having enough close friends	.73				
19. Problems with partner/ex-partner			.61	.43	
20. Not having someone who shows you love and affection	.79				
21. Feeling too dependent on others	.70				
7. Having problems communicating with others	.45			.49	
13. Problems with children			.68		
14. Not having a satisfying job			.67		
24. Not having someone who understands your problems	.68	.38			.34
26. Conflicts with people who are close to you					.71
22. Not having children/dependents		.32		.57	
11.Having too little leisure time				.49	
25.Having too much time on your hands					.78
10. Not having enough responsibilities	.63				.38
15. Feeling too controlled by others		.53			
23. Problems with in-laws/relatives	.45	.42			
8. Not seeing enough of people you feel close to		.61			

A higher order factor analysis was undertaken to determine the presence of an overarching factor (Cattell, 1978). Scale scores were constructed from unweighted sums of the items loading on each obtained factor. An oblique rotation was specified with four factors to be extracted. The structure matrix is presented in table 3.11. Figure 3.6 gives the scree chart.

Table 3.11 Structure Matrix of the higher order factor analysis

	Isel Factor 1	Inst-Expres Factor 2	Issb Factor 3	SSQ Factor 4
IBEMOT			.87	
IBGUIDE			.89	
IBTANG			.76	
IECHILDR		.60		
IELACKCO		.82		
IEMONEY		.63		
ISELAPP	.62		.50	
ISELBEL	.81		.40	
ISELSE	.81			
ISELTANG	.55		.33	
SSQN				.82
SSQS	.33			.78

A clear factor structure emerges from the higher order factor analysis with the factor identification being ISEL (factor 1); Instrumental-Expressive (factor 2); ISSB (factor 3); and the SSQ (factor 4). The overlap between the ISEL and the SSQ, except for the *Self-Esteem* subscale affords evidence that the two scales are measuring perceived social support.

Table 3.12 Summary statistics for the higher order factor analysis

Variable	Eigenvalue	%Variance	α values
IBEMOT	3.41	26.3	.89
IBGUIDE	2.30	17.7	.86
IBTANG	1.69	13.0	.74
IECHILDR	1.03	7.9	.67
IELACKCO	.96	7.4	.85
IEMONEY	.93	7.2	.72
ISELAPP	.53	4.1	.67
ISELBEL	.47	3.7	.78
ISELSE	.46	3.6	.62
ISELTANG	.33	2.5	.57
SSQN	.27	2.1	.97
SSQS	.02	.2	.95

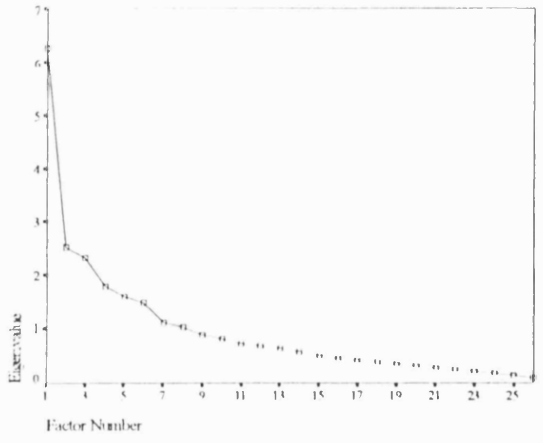

Figure 3.6 Scree chart of the higher order factor analysis

The alpha value for Iseltang is below that generally accepted for scale reliability but is consistent with values obtained in previous studies.

Inter and Intra Scale Correlations

A further aim of the study was to examine the overlap between the scales in terms of dimensions using a correlational analysis. Zero-order correlations were calculated for the main scales and their subscales. The results are presented in table 3.13. Both the SSQ(N) and SSQ(S) are unidimensional and have been labeled as *Emotional* scales (Winemiller et al., 1993). Both short forms have a large correlation with their respective main scales (r = .95; r = .94) indicating that they are measuring the same underlying construct. The correlations between the SSQ(N) and SSQ(S) are similar to those reported by Sarason et.al., (1987b). The pattern of correlations between the main scales provides evidence for the distinction between enacted and perceived support. The ISEL has medium correlations with both forms of the SSQ (SSQ(N) r = .39; SSQ(S) r = .39). The correlation (r = .45) with the short form SSQ(S) is slightly higher and approximates the correlation (r = .44) between both forms of the SSQ. Thus, the ISEL and the SSQ both measure perceived social support. The ISSB has a medium correlation with the ISEL (r = .30), a small correlation with the SSQ(N) (r = .25) and no correlation with the SSQ(S) (r = .07).

The correlation between ISEL and ISSB is comparable (r=.29) to that reported by Lakey and Cassady (1990). Thus, the ISSB has little overlap with the other scales and measures enacted support. The IEES total scale has no correlation with the ISSB (r=.07) and only a small correlation with the SSQ(S) (r=.18) which suggests that if the IEES is measuring social support then it is more likely to be perceived support. Inspection of the correlations of the *Lack of Social Companionship* subscale also indicates that it is possibly measuring a similar construct to that of the ISEL *Self-Esteem* (r=.31) and *Belonging* (r=.25) subscales. Inclusion of the IEES added items relating to *problems with social support*.

Table 3.13 Correlational analysis of the four scales and subscales (N = 123)

	α	1	1a	1b	1c	1d	2	2a	2b	2c	3	3a	4	4a	5	5a	5b
1 ISEL	.84																
1a Self-Esteem	.62	.75															
1b Belonging	.77	.86	.58														
1c Appraisal	.67	.73	.33	.55													
1d Tangible	.57	.58	.27	.32	.22												
2 ISSB	.92	.30	.27	.26	.27	.07											
2a Guidance	.86	.21	.20	.20	.18	.00	.89										
2b Emotion	.90	.28	.22	.25	.29	.06	.90	.71									
2c Tangible	.74	.28	.25	.21	.19	.18	.72	.53	.48								
3 SSQ(N) full	.97	.39	.18	.36	.32	.27	.25	.21	.27	.17							
3a SSQ(N) s	.92	.36	.18	.32	.29	.26	.19	.15	.21	.15	.95						
4 SS(Q) full	.95	.39	.22	.34	.35	.21	.07	.07	.09	.03	.44	.44					
4a SS(Q) s	.85	.45	.25	.37	.37	.30	.07	.06	.05	.08	.47	.50	.94				
5 IEES	.82	.11	.21	.15	-.02	-.04	.07	.08	.02	.09	.12	.11	.18	.21			
5a Companion	.85	.22	.31	.25	.09	-.05	.12	.12	.10	.08	.10	.08	.25	.25	.82		
5b Money pblm	.72	.04	.12	.01	-.06	-.06	.02	.06	.00	.00	.10	.09	.06	.08	.54	.37	
5c Family pblm	.67	-.04	-.02	.01	-.07	-.05	.00	.00	-.05	.09	.02	.05	.05	.09	.63	.20	.09

r > .26 (p < .001) r > .20 (p < .01) r > .18 (p < .05), two-tailed

The expectation was that there would be medium negative correlations with the other scales indicating conflict. The absence of these negative correlations and lack of positive correlations suggests that the item content adds little incremental validity to the assessment of social support.

Dimensions of the Reciprocity Scale

A content analysis of the social support scales reviewed in this chapter suggests that items indicating perceived availability of one person who expresses their concern for the individual's well being is one major discernible dimension. The Belonging subscale (ISEL), Emotional subscale(ISSB), Companionship subscale (IESS), SSQ(N) and SSQ(S) had medium correlations (r= .25-.36). The item labels with high factor loadings relate to the presence of a significant other e.g.,*I regularly meet or talk with members of my family, No one I know would throw a party for me, When I feel lonely, there are several people...*(ISEL); *Told you that s/he feels very close to you, Let you know that s/he will always be around, Told you that s/he would keep things you talk about private*(ISSB); *Not having someone who shows you love and affection, Not having a close companion, Not having enough close friends* (IESS); *Whom can you really count on to care about you regardless, Who helps you feel that you have truly something positive to contribute, Whom can you count on to console you when you are very upset* (SSQ(N)); *Whom could you really count on to help out in a crisis situation, Whom do you feel really appreciates you as a person, Who accepts you totally, including both your worst and best points* (SSQ(S)).

A second dimension is that of tangible or instrumental support. The Tangible subscale (ISEL), Tangible subscale (ISSB), SSQ(N) and SSQ(S) have a medium correlation (r= .18- .27). The item labels with high factor loadings relate to the perceived availability of practical assistance e.g., *If I got stranded 10 miles out of town someone would come to get me, There is no-one I could call on if I needed to borrow a car, If I were sick (R), there would be almost no-one to help with my chores (R)* (ISEL); *Gave you under £25, Provided you with some transportation, Gave you over £25*

(ISSB); *Whom could you really count on to help out in a crisis situation, Whom can you count on to give you useful suggestions* (SSQ(N)); *Whom can you really count on to be dependable when you need help, Whom do you feel would help if a good friend had a car accident* (SSQ(S)).

A third dimension is the perceived availability of someone to listen and provide advice. The Appraisal subscale (ISEL), Guidance subscale (ISSB), SSQ(N) and SSQ(S) correlate within a range of r = .18-.35. The item labels with high factor loadings relate to listening and being given advice e.g., *No-one with whom I can share my private worries, If a family crisis arose, few friends able to give advice, There is really no-one who can give me objective feedback* (ISEL); *Told you what s/he did in a similar situation, Gave you information on how to do something, Suggested action that you take* (ISSB); *Whom can you count on to listen openly and uncritically to your feelings, Whom can you talk with frankly, without having to watch what you say, Whom can you really count on to listen to you when you talk* (SSQ(N) & SSQ(S)).

The effects of homesickness on the standardisation population

The internal reliability (Cronbach's alpha) of the Dundee Relocation Inventory (DRI) was 0.79. Partial correlations controlling for sex were calculated in order to investigate the relationship between the social support scales (ISEL, SSQ and ISSB) and the DRI and GHQ. The results are presented in table 3.14.

Table 3.14 Partial correlations between the social support scales controlling for sex

DRI					
GHQ	-.48				
ISEL	.34	-.30			
ISSB	.08	.12	.23		
SSQ(N)	.18	-.24	.29	.12	
SSQ(S)	.09	-.18	.00	.00	.38
N=114	r>.16 p<.05		r>.28 p<.001		

Table 3.14 indicates that there is a medium correlation between the DRI, GHQ and ISEL. The GHQ correlation is in the predicted direction. Using the DRI as the dependent variable a stepwise multiple regression analysis was performed. The

results are presented in table 3.15.

Table 3.15 Results of the multiple regression analysis

Source	R square	β	test of final model
ISEL	0.28	0.19	F= 22.39 *
GHQ	0.25	-0.46	

* $p < .001$

The present result suggests that for undergraduates in their first term at a university, an explanation of homesickness needs to include perceived social support as a factor. However, do similar considerations apply to the development of a reciprocity measure? At present it is not known how homesickness produces a lower quality social network. Does homesickness reduce social network membership or do individuals with psychological disturbance maintain lower quality social networks? Eureling-Bontekoe, Tolsma, Verschuur and Vingerhoets (1996) reporting on homesickness in a non-clinical female population found that personality factors were important markers of the vulnerability to develop homesickness. The present study used a cross-sectional design and did not distinguish between students who had experienced minimal or maximal disruption in their social network. However, the DRI is a specific measure of homesickness whereas the GHQ is a global measure designed to "detect psychiatric disorders among respondents in community settings (Goldberg, 1978 p.5). Thus, if individuals with non-clinical GHQ scores have high DRI scores, reflecting positive adaptation, and *vice-versa* , then it would suggest that a personality factor was salient as compared to social network disruption. Table 3.16 gives the partial correlations controlling for sex for the split population based on the criterion cutoff score of 11 for the GHQ for the social support questionnaires.

Table 3.16 Partial correlations controlling for sex for split GHQ scores

GHQ <=11					GHQ >11			
DRI								
ISEL	.16				.43*			
ISSB	.20	.17			.01	.28*		
SSQ(N)	.18	.17	.16		.04	.36*	.10	
SSQ(S)	.06	.30*	.08	.51*	.05	.17	-.11	.16
N= 57	all correlations n.s. except *p<.05				N=54			

A one sample t test shows a significant difference between the two group means ($t = -4.93$; $n = 61$; $p < .001$) as predicted with higher DRI scores for the non-clinical group ($mean_{nonclinical} = 62.2$ std.dev. = 5.3; $mean_{clinical} = 58.0$ std.dev. = 6.7). Further, individuals with GHQ scores greater than 11 show a significant correlation between their scores on the DRI and the ISEL suggesting that personality effects are more salient than physical relocation *per se* in homesickness. Given that the variance in the DRI can be attributable to the operation of personality variables the use of students as the standardisation population for a measure of reciprocity is justifiable.

DISCUSSION

The factors assumed to underlie the social support scales account for only around half of the total amount of common variance. For example, the ISEL scree chart indicates that there are more factors than the four the scale authors suggest. In order of variance accounted for the SSQ(N) is first with 57.8%; the IEES is second with 55.8%; the SSQ(S) is third with 47.9%; the ISSB is fourth with 41.5% and the ISEL is fifth with 33.6%. These figures can be considered as noteworthy given that the combination of a principal components extraction procedure and a varimax rotation maximises the amount of variance accounted in any set of variables. If the maximum variance is represented by these figures then either the concept, the measures of social support or both remain reasonably vague. For comparison the

figures in table 3.17 show the total accounted variance in published studies.

Table 3.17 Variance accounted for in published studies of social support measures

Scale	Study	Factor method	No. of factors	Rotation	Variance
ISSB	(Barrera & Ainlay, 1983)	principal factor analysis	7	varimax	49.3%
ISSB	(Stokes & Wilson, 1984)	principal components	4	promax	43.2%
ISSB	(Pretorius & Diedricks, 1993)	not stated	3	varimax	76%
SSQ(N)	(Sarason et al., 1983)	not stated	1	unrotated	82%
SSQ(S)	(Sarason et al., 1983)	not stated	1	unrotated	72%
SSQ(N)	(Pretorius & Diedricks, 1993)	not stated	1	unrotated	74%
SSQ(S)	(Pretorius & Diedricks, 1993)	not stated	1	unrotated	72%

The SSQ is consistently regarded as having two factors which account for a high percentage of the common variance. The ISSB has been considered to have three or four underlying factors. In the current study a three factor solution was confirmed. For the ISEL, in the few reported studies, a four factor solution is suggested though detailed information about the factor analysis was not provided (Brookings & Bolton, 1988).

The IEES is an interesting scale in that while the factors account for a high percentage of the common variance the dimensionality of the scale is questionable. For example, although two items clearly load onto the *communication problems* subscales three of the items load separately onto the other three subscales. Further, there are few intercorrelations with other measures of social support. However, the current study is not primarily concerned with the social support concept. Rather the present analysis has been undertaken to determine the dimensions that are discernible using a theoretical perspective within the social support literature. In summary the dimensions of emotional support and tangible support are definable. A third dimension containing elements of information/ guidance/ appraisal can also be identified. The social support scales that possess such dimensionality are the ISSB and the ISEL. While the SSQ has very good psychometric properties as a measure of social support it does not have the dimensional structure for assessing

the construct validity of the reciprocity measure. Although the psychometric properties of the ISEL subscales are variable, their validity has been shown in several studies. Medium to large correlations between the subscales and several measures of subjective well-being have been reported (Emmons & Colby, 1995). For example, correlations were found between the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) and $ISEL_{appraisal}$ $r = .26$ ($p < .01$); $ISEL_{belonging}$ $r = .32$ ($p < .01$); $ISEL_{tangible}$ $r = .18$ (n.s.); $ISEL_{esteem}$ $r = .55$ ($p < .01$). Accordingly future studies will use the ISSB and ISEL to determine the construct validity of the reciprocity measure.

While there is no one specific theory that invokes the concept of reciprocity there are several paradigms that have used reciprocity as an explanatory concept. For example, in the help seeking literature reciprocity has been suggested as a mechanism for preventing resentment on the part of the help givers or the termination of the helping relationship (DiMatteo & Hays, 1981). In this approach two mechanisms are suggested by which the equilibrium can be restored between the aid giver and the receiver. Reciprocation may occur in a specific exchange or repayment to the help giver or by generalised reciprocity in which the person receiving the aid repays the original helper with another perceived equivalent form of aid. An alternative approach is to consider reciprocity at a social network level whereby the recipient of aid assists another network member rather than repaying the original person. The above distinction is analogous to the general and relationship based perceptions of social support (Pierce et al., 1991). Typically it is argued that social support scales assume measurement of the general perception of available support and that relationship-specific perceptions of social support have not received a similar level of attention. Thus, a parallel explanation may exist for reciprocity. A related issue is whether to assess the content or the type of relationship. Social exchange occurs between individuals and therefore the relationship between the individuals may be considered as the salient aspect in the exchange process. However, there are difficulties with this approach because of the variation in the content of relationships such as "friends" (Fischer, 1982). Further,

in a study contrasting relationship types and support content the best indicator of the latent concept of support were scales measuring emotional and instrumental content (van Tilburg, 1990). A particular caveat is that situational aspects may cause support content to interact with relationship type. For example, when asked to name those who can help solve lifestyle problems, 60% of the people named are informal helpers (e.g., family members, friends and neighbours), as compared with 10% for formal helpers (Gottlieb, 1978).

Relationship type as a source of social support may also be connected to the support content. For older adults reliable alliance was reported as more strongly related to well-being when provided by kin compared to reassurance of worth which was more strongly related to well-being when provided by nonkin (Felton & Berry, 1992). For cancer patients support was found to be partially dependent on the source of support, with preference for emotional support being provided by spouse and informational support by physicians and nurses (Dakof & Taylor, 1990). However, the content of the exchange has a closer association to the concept of reciprocity than the relationship type (van Tilburg et al., 1991).

A wider theoretical framework for reciprocity, within psychology, is given by equity theory (Walster, Walster, & Berscheid, 1978). In particular the concept of a social balance, when a person perceives equal relative gain from a social exchange, has utility in formulating what the outcome might be when exchange is not balanced. In particular the "currency" that is used to translate the cost of the content exchanged needs to be determined. A central question is whether people have an internal metric for calculating the gains and losses within their social exchanges. Within social exchange theory at the dyadic level the concepts of generalised reciprocity (assistance given and if possible returned); balanced reciprocity (direct exchange); and negative reciprocity (attempting to receive without returning assistance) assume that people do use an internal metric.

At the social network level the balancing concept of reciprocity (Wellman et al., 1988) where a recipient of aid assists another network member also assumes an internal metric.

However, prior to the adoption of a general theory the component theory of reciprocity requires validation . Chapter 4 considers the development of a reciprocity measure based on the three components identified as a result of the present analysis.

Chapter 4 - Initial development of the reciprocity scale

INTRODUCTION

The previous study showed, through confirmatory factor analysis and correlational analysis, that the ISEL and ISSB can be considered robust, reliable and valid multi-dimensional measures of social support. Both measures were shown to have adequate psychometric properties. Each appeared to have three factors which were labeled emotional support, tangible support and guidance/appraisal support. The present study used these three factor concepts to provide the conceptual framework for three constructed reciprocity measures and reports on their technical qualities. The fundamental question that guided the study was 'what would a reciprocity measure look like?' The concept of reciprocity has been invoked as an explanatory variable, *inter alia*, within social support research (Antonucci & Jackson, 1990); within equity theory (McClintock, Kramer, & Keil, 1984); social exchange theory (Emerson, 1976) and game theory (Komorita, Chan, & Parks, 1993). However, the continued absence of a psychometrically valid and sensitive scale to measure reciprocity has meant that the theoretical extensions of reciprocity have gone beyond what current measures can account for. In the absence of a commonly used scale, the same term 'reciprocity' is used to describe different concepts, for example, both the actual and perceived exchange of support resources. Consequently conceptual confusion exists, with the attendant low generalisability of research findings and further weakening in the explanatory power of the reciprocity concept. The present chapter examined whether the methods of calculating reciprocity led to systematic variation in relationships with social support measures and a selected group of index variables.

Why develop a new reciprocity measure rather than modify an existing social support measure?

Two implicit assumptions underlie all the reviewed social support measures, that it is received support and that all aspects of social support are psychologically equivalent. Clearly for some specific support resources the value is known by both the giver and the recipient, for example in giving and receiving money. The circumstances surrounding such exchange, for example, in the loan of money, may alter the values relative to the giver (the risk of giving) and the receiver, but nonetheless the values are quantifiable with reference to an external reference point. However, for nontangible social support resources, such as listening to someone's emotional problems, the values to the giver and the recipient are not necessarily known. The value of *money* and *listening to emotional problems* are unlikely to be the same for the giver and the receiver. Support for the above distinction comes from a study by Maton (1987) in which all provided and received goods/services between participants were converted to dollars. He found significant differences in value between goods and services. Given the high interrater reliability between the value coders (mean = 0.87) for goods and services the study suggests that accurate relative value estimation is possible between goods and services. It was a relative valuation since the standard values were imposed by the author of the study who in turn based the values on locally available stock catalogues and rates of pay for local workmen. Unfortunately no values were reported for nontangible support resources. For these resources if there are differences in the value of providing and receiving the **same** social support resource then calculating reciprocity as a difference score would be misleading and be subject to unquantifiable bias.

The **frequency** of providing or receiving social support resources is also likely to interact with value. Organising a birthday party, for the recipient an *a priori* low frequency event, would be expected to have a high value, though the provider value would be variable depending on the frequency with which they organised

birthday parties. In contrast the exchange of a common place item having a high frequency of occurrence would be expected to have a low value. Further there may be differences in the relative values between providing and receiving as a function of frequency. The value between providing and receiving high frequency social support resources may be equivalent whereas for low frequency social support resources different values may prevail for the provider and the receiver. There may also be an interactive effect for high frequency provision and low frequency receipt. Existing social support measures cannot detect the differences discussed above. Detecting differences is important in the prediction of social exchange outcomes. Equity theory assumes that there is no difference in absolute values in the support resources exchanged and an arithmetical correction to ensure that this is the case has been proposed (Hatfield et al., 1979). If relative differences can be found then the equity calculation requires revision. The provision and receipt of social support resources is connected with **emotional feelings**. The value of provided and received social support resources are likely to interact with these associated emotional feelings. For example, having a friend give good advice may not be associated with a high premium by the friend but receiving it may be highly valued and associated with a positive emotional feeling.

An interaction effect between frequency and emotional feelings on value of the social support resource is also likely. A further potential factor in valuing the social support resource is the cost. For example, giving a book that is no longer wanted may be valued lower in ease of provision than assisting someone in moving their furniture from house to house. A similar situation may prevail for the same support resource such as looking after a child. A person without children might attribute a low value to providing childcare for an evening whereas a person with children may place a high value on childcare in order to have an evening "free". Secondly, the primary focus of social support scales is on the receipt (either perceived or enacted) of resources rather than the giving of resources. Social support resources that are given are not necessarily reciprocated equivalently in terms of type or comparable cost, but the fact that something is exchanged is

significant. The offer of being taken by car to collect a pension may be reciprocated by the giving of a small home made food item (e.g. Wentowski, 1981). A measure of reciprocity would need to be sensitive to the exchange process of different social support resources. For example, there may be an underlying metric which equates emotional support and tangible aid. In a recent study of instrumental support exchanges between older adults Ikkink and van Tilburg (1998) found no evidence that emotional support was given to compensate for nonreciprocal instrumental support exchanges (The measure of reciprocity was a difference score created from a frequency based set of twelve questions asking about emotional and instrumental support provided and received).

In summary, existing measures of reciprocity assume that all support resources have equivalent value and therefore are insensitive to different values between giving and receiving. The existing reciprocity measures assume that emotional support can be interchangeable with other types of support exchanged. A more radical departure for the present purposes would be to question whether social support is conceptually different from reciprocity. Pragmatically the subjective process of subtracting giving and receiving may lead to a different conceptual variable. There may be two processes, giving and receiving, whereas the current literature assumes that there is one process. The linear subtraction of giving and receiving assumes that there is one process. Thus, changing the item phrasing for an existing social support scale does not provide a reciprocity measure if the scale is still measuring one factor (e.g., Jung, 1990). Consideration of the latter possibility has not yet been explored in the published literature. The above discussion suggests the need for an examination of what a reciprocity measure with adequate psychometric properties might look like. In the next section selected index variables are identified and hypotheses developed on the basis of the expected pattern of correlations with these variables.

2.0 The relationship of a reciprocity measure and social network variables

It has been suggested, though not yet demonstrated, that reciprocity acts as a transactional variable linking functional and structural measures of social support (e.g., Israel, 1982). Therefore a validity check for a reciprocity measure would be for it to correlate with a measure of social network structure. In particular if reciprocity is significant in the maintenance of social relationships then a reciprocity measure should correlate with a measure of connectedness between individuals. Density is one measure of connectedness in social networks, defined as the proportion of the theoretically possible direct links actually in existence (Barnes, 1969 p.63). A generally applicable computational formula has been given as:

$$\%\text{Density} = \frac{100 \times Na}{\frac{1}{2}N \times (N-1)} \qquad \text{Eqn. 4.1}$$

Na = number of actual relations
N = number of persons involved
½N x (N-1) = number of theoretically possible relations.
(Neimeijer, 1973).

Density was initially a measure based on direct observation of relations though the subjective assessment of density has also been shown to be a useful and reliable index of connectedness (Hammer, 1985). Since network density is inversely related to network size, when comparing different networks, network size should be held constant. A major caveat in using network density is that there may not be a linear relationship with increasing network size. There are a finite number of relationships that can be maintained by an individual (Mitchell, 1969). Hence, the relationship between network size and density may be heteroscedastic, that is, the variance in network density may not be constant at all values of network size. However, in an analytical simulation of network density on measures of network structure heteroscedacity did not significantly attenuate density for network sizes of upto 15 people. The attenuation effect was more marked for network sizes greater than 40 (Friedkin, 1981). Network density has been be shown to influence help seeking behaviour with high density networks correlating with low utilisation

of professional maternity services (McKinlay, 1973). A study of recently divorced women replicated the finding, for high density networks 32% of the respondents sought aid compared to 58% in low density networks (Wilcox & Birkel, 1983). Hirsch (1979) studied the relationship between examination stress experienced by students and their network density over 27 days. The results indicated that students in high density networks reported high levels of social support though they reported low satisfaction with the support received. The results were interpreted as reflecting intra-network conflict. In a subsequent study, Hirsch (1980) found similar results between network density and natural support systems (NSS) with widows and women returning to higher education.
He concluded:

> "While perhaps less a cultural ideal, a low density, multidimensional NSS nonetheless emerges from this study as more adaptive" (p.169).

Network density can therefore be seen to be a structural measure of network connectedness and related to social support transactions. In high density networks the flow of goods and communication among network members is facilitated, with high pressure of being required to conform to social norms (Kapferer, 1969). In low density networks there is more variation in the flow of goods and communication with low pressure to conform to social norms. One such social norm is the relationship between giving and receiving. Network density as used in the literature is considered a dichotomous variable rather than a continuous variable, in part because of the earlier discussion about the relationship between network density and size. The definition of high and low density is then based either on normative data that has been reported in the literature or on a median split technique on the collected data set. Based on the equation 4.1 the normative value for network density is 30% (Wellman et al., 1988). *Thus, it is hypothesised that in high density networks giving and receiving would be more highly correlated than in low density networks.*

Demographic variables

Birth order has been found to correlate with psychological well-being in high school graduates aged 17-23 but showed no significant differences between first borns and other borns on a social network index (Fullerton, Ursano, Wetzler, & Slusarcick, 1989). Data was collected in order to assess the possible relationship between birth order and social networks.

Other demographic variables recorded included age; sex; marital status; class and number of people in the social network.

Index variables for the reciprocity measure

Reciprocation Ideology

The reciprocation ideology scale (Eisenberger et al., 1987) was developed to measure two factors: creditor ideology and reciprocation wariness. A creditor ideology factor measured the belief that returning greater help than that received will result in more repayment in the long run and a reciprocation wariness factor measured the belief that caution is required in order to avoid being disadvantaged. The present study sought to confirm the original factor structure. *It was hypothesised that reciprocity would be positively correlated to creditor ideology but negatively correlated to reciprocation wariness.*

Locus of control

In the social support literature, individuals with an internal locus of control, (Lefcourt, Martin, Fick, & Saleh, 1985; Levenson, 1981; Rotter, 1966; Sandler & Lakey, 1982) have more sources of social support available to them than those with an external locus of control (Hansson, Jones, & Carpenter, 1984; Jones, 1982). Individuals with an internal locus of control are more able to mobilise sources of support from their social networks when confronted by crises (Eckenrode, 1983).

Individuals with an internal locus of control generally show higher levels of psychological well-being (Cohen & Edwards, 1989). These higher levels of psychological well-being have been attributed to the role of perceived social support acting as a main effect (Schwarzer & Leppin, 1991). The reported correlations between locus of control and perceived social support (SSQSarason et al., 1983) while significant are typically small ($r = .15$; $p < .05$) (VanderZee, Buunk, & Sanderman, 1997).

The locus of control variable has also been associated with the creation and maintenance of social relationships (Sarason & Sarason, 1982). *Thus, consistent with the cited literature it is hypothesised that individuals with an internal locus of control will perceive themselves as more reciprocal than those with chance or powerful others locus of control. Individuals who have an internal locus of control will perceive a balance between the provision and receipt of social support resources.*

Belief in a just world

Though the concept of reciprocity and a belief in a just world has not been systematically investigated the areas are likely to be linked. Greenberg (1983) proposed that some individuals, who they labeled as creditors, always believed in giving more resources than they received back in order to create, and maintain, a power advantage over the recipient. In a preliminary study students were classified as high or low creditors. The students then read a short story the crux of which was a decision undertaken by the "hero" between helping someone who had helped him or helping another person who had been treated inequitably. High creditors were found more likely to predict that the hero would help the person who had previously helped him in preference to the latter. They concluded that creditors preferred to have others in debt because creditors believed that belief in the norm of reciprocity produced generous repayments (Gouldner, 1960; Gouldner, 1973). The moral norm, while not specifying exactly what the form or timing of the repayment should be, would sanction the general adoption of the exchange process. Evidence for the presence of a moral norm comes from

experimental observations that participants prevented from reciprocating benefits experience considerable emotional distress (e.g. Shumaker & Jackson, 1979). Thus, it is plausible that *belief in the norm of reciprocity* may be a similar perceptual bias to that of *a belief in a just world.* An early definition of a *belief in a just world* was "all of us need to believe that we live in a world which we and others like us can get what we deserve -- and deserve what we get" (Lerner, 1970 p.51). A series of studies demonstrated that some people, when confronted by unjust situations involving innocent people, "blame the victim", in order to maintain their belief that the world is a just place (Lerner & Miller, 1978). At a theoretical level it has been proposed that a belief in a just world is an attributional process (Lerner, 1980). Whereas there are no published studies that have reported analogous experiments with the *belief in the norm of reciprocity* it probable that it is also an attributional process. *Based on the above discussion it was hypothesised that the reciprocity scores of people who perceived themselves as giving as much as they received, would also be correlated with their scale scores on belief in a just world.*
The measurement issues surrounding the Just World Construct have led researchers to measure the construct with more than one scale. For example, in a confirmatory factor analysis of the JWS (Couch, 1998) reported a two factor solution in contrast to the original single factor and a lower internal consistency (cronbach's alpha = .63). O'Connor (1996) has reported on the GJWS (Lipkus, 1991) and recommended that at least two scales are used to measure the construct.

Summary of study aims

There were three aims to the present study. The first aim was to create a robust reciprocity measure using factor analytic methods and developed on a non clinical population. The second aim was the assessment of the psychometric properties of the reciprocity measure with reference to the ISEL and the ISSB. The third aim was provide construct and concurrent validity for the measure by hypothesising that for:
Network density: giving and receiving factors should have a higher correlation in

high density networks than in low density networks;

Reciprocation Ideology Scale: if the reciprocity measure is positively correlated to creditor ideology then it will be negatively correlated to reciprocation wariness;

Locus of Control Scale: individuals with an internal locus of control will perceive themselves as reciprocal compared to those with chance or powerful others locus of control;

Just World Beliefs: people who perceived themselves as giving as much as they received, that is a balanced relationship, would be predicted to be correlated with a belief in a just world.

Marlowe-Crowne social desirability scale: there will be no significant correlations with the scale excluding the possibility the reciprocity measure is tapping acquiescence to a perceived social approval/disapproval (Crowne & Marlowe, 1960).

METHOD

Participants

A total of 203 questionnaire packs were distributed within a University population. 185 packs were completed (91% completion rate). The mean age of participants was 21.27 years (std.dev.= 6.33) and 61% of the participants were female. Ninety-five percent of the participants recorded their marital status as single. With respect to birth order 51% were firstborns (median = 1). The occupational status of the parents was recoded into a class variable using the OPCS (1991) classification. 46% of the participants were coded as class 2 (median =2).

Instruments

Prior to item generation a decision was taken to conceptualised reciprocity as the exchange of the three social support resources identified in chapter 3 viz., emotional support, tangible support and guidance/appraisal support. The items were written by the thesis author.

The following criteria guided item generation:

i) items were worded to minimise ambiguity and referred to observable favours;

ii) items were written so as to avoid reference to a specific population;

iii) no items were included that referred to psychological disorder;

iv) an attempt was made to balance high frequency and low frequency favours;

v) given the effect of gender within social support, gendered favours were avoided as far as possible;

vi) for each favour the wording was carefully phrased as a favour given or received.

The items were circulated for comment on the clarity of wording to four judges (two female, two male). Table 4.1 indicates the total list of list of 66 items for favours received.

Table 4.1 Items generated for receiving favours

1. Have a letter posted by a friend
2. Be driven for an hour to an airport for a 6am flight
3. Go to a mutually desired leisure event (eg a concert)
4. Have someone paint and hang wallpaper in a large living area
5. Be bought a drink in a public house/nightclub
6. Be taught by a friend how to replace a car/bicycle tyre
7. Be listened to by a friend when you are angry about someone
8. Borrow a CD/Tape over a weekend
9. Have furniture moved into your new home during a weekend
10. Borrow a commonplace thing (eg a calculator)
11. Have a wastepaper basket emptied into an outside bin
12. Have a party organised and paid for you as a celebration
13. Have your emotional problems listened to for over an hour
14. Be shown by a friend how to use a cafetiere
15. Have your hair washed and styled for a special occasion
16. Be given advice on how to arrange your social life
17. Have travel tickets picked up from an agency on your behalf
18. Be listened too when talking about an intimate relationship
19. Receive a greeting card to acknowledge a significant date
20. Play a competitive game together
21. Ask a friend to lie in order to defend your behaviour
22. Have a friend house sit while you are on holiday over a week
23. Be given a book they no longer want
24. Get a parcel collected on your behalf from a sorting office
25. Refrain from asking for the return of something borrowed
26. Be invited by a friend for a meal
27. Be given a hug when you return from a holiday
28. Borrow £500 over a year without interest
29. Borrow a catalogue which they have obtained for their own use
30. Be taught how to play a new card game
31. Have them listen to you talking about a third person (gossip)
32. Water your plants while you are on holiday for over a week
33. Borrow their car to attend an important interview
34. Be driven to a shop during the week
35. Help in your garden by mixing concrete/laying a lawn
36. Accompany you to a party as 'the friend'
37. When asked, give an honest opinion which may be hurtful
38. Help you complete a government form (eg passport/tax return)
39. Have them write you a reference for a job
40. Borrow an item of clothing for a special event
41. Have someone make all the arrangements for a joint holiday
42. Go shopping for a specific gift for you
43. Stay with you in a hospital accident department for hours
44. Help you change a punctured tyre
45. Look after a dog/cat for over a week while you are away
46. Purchase food items for you as part of their own shopping
47. Borrow £5 for a week

48.Be given an item of furniture that they no longer need
49.Assist you in solving a difficult personal problem over a weekend
50.Borrow a book that they have suggested you read
51.Respond to an emergency request that inconveniences them a lot
52.Borrow equipment for a job or leisure pastime (eg drill/tent)
53.Make a telephone call on your behalf
54.Help you move a large item (eg fridge/bed) to another place
55.Play a major role at a ceremonial event (eg Best Man at a wedding)
56.Visit the theatre/concert/cinema/gym because you want to go
57.Rearrange an appointment with a dentist/doctor on your behalf
58.Offer advice about clothing when out shopping for a day
59.Give an opinion to assist in your choice of home decor
60.Look after your children/aged relative for an evening
61.Wash up after a meal that you had prepared
62.Look after your house key for tradesman access during the day
63.Give advice over a lunch break about a relationship problem
64.Supply small amounts of groceries when you run out (tea/coffee)
65.Telephone you during the evening when your are unwell/upset
66.Record a programme on video or copy an audiotape for you

Specific cognitive errors are likely to be made when making judgments about providing and receiving support. Respondents have been found both to distort the questions being asked (Roberto, 1989) and to exaggerate the level of support provided (Thompson & Kelly, 1981). In a study specifically examining the ordering of items when asking about reciprocity van Tilburg (1992) randomly allocated respondents into four groups and gave different presentations to the four groups. In the first group, the receive support question was asked prior to the provided support question and reversed for the second group. For group three the total set of receiver questions preceded the total set of provider questions and reversed for group four. A method effect was found such that relationships are more likely to be reciprocal if the pairs of questions of receiving and providing support immediately succeed each other than if the total set of questions on receiving support precedes the entire set of reversed questions. A further analysis found that it was not the sequence of presentation of providing or receiving that accounted for the method variance but the pairwise/blockwise presentation. Hence, the questions in the present study were presented blockwise. Separating the two lists within the presentation with other questionnaires additionally minimised the memory recency effect.

In the present study four response categories were created for each item on the two favour lists. First, participants were asked to give each item a points value within a range of 1-100. Second, the frequency of occurrence rating was obtained for each item using a four point scale (1 = less than a year; 2 = at least once a year; 3 = at least

once per month; 4 = at least once per week). Third, each item was rated with respect to the difficulty experienced in either giving or receiving the favour on a four point scale (1 = very easy; 4 = very difficult). Fourth, each item was rated on a four point scale (1 = low; 4 = high) with regard to the attached emotional response (feelgood factor).

The validation measures for social support were the Interpersonal Social Evaluation List (Cohen et al., 1985) and the Inventory of Socially Supportive Behaviors (Barrera et al., 1981). Network density was measured by the network grid developed by (Hirsch, 1979; Hirsch, 1980). The individual difference variables were measured by the Reciprocation Ideology scale (RIS) (Eisenberger et al., 1987); the Locus of Control scale (LCS) (Levenson, 1981); the Just World Beliefs scale (JWS) (Rubin & Peplau, 1973; Rubin & Peplau, 1975); and the Global Just World Beliefs scale (GJWS) (Lipkus, 1991). Table 4.2 gives the psychometric properties reported by the original authors of these scales.

The tendency to give socially desirable answers was measured by the Social Desirability scale (Crowne & Marlowe, 1960). Demographic details requested included age; gender; marital status; birth order; and occupational status of parents.

Table 4.2 Psychometric properties of the RIS; LCS; JWS & GJWBS

	Internal Reliability	Factor structure	N of items
Reciprocation Ideology scale:		three	
Creditor ideology	.79[1]		9
Reciprocation wariness	.80[1]		8
Reciprocity-norm acceptance	.45[1]		4
Locus of Control scale:		three	
Internal	.64[2]		8
Powerful others	.77[2]		8
Chance	.78[2]		8
Just World Beliefs	.80[1]	one	20
Global Just World Beliefs scale	.82[1]	one	7

[1]Cronbach's α
[2]Kuder-Richardson

Procedure

Participants were recruited from a predominantly student population. Each participant completed the pack in group sessions lasting approximately one hour. Debriefing occurred on a group basis at the end of the sessions.

RESULTS

Demographic Results

Correlations between the demographic variables are presented in table 4.3. With respect to marital status 94% of the population reported that they were single. This was consistent with the mean age of the population (mean = 21.27 years; std.dev. = 6.33). Schulman (1975) in a study of life span changes in adults found that young adults (18-30 years) exchanged more aid and changed their network composition more. Thus, the present mean age is consistent in a study developing a reciprocity measure. In order to assess the effect of marital status on the demographic variables partial correlations were calculated. Only the correlation between age and people gained in significance ($r = -.24$; $n = 147$; $p < .003$) indicating, as expected, that older participants reported fewer network members.

Table 4.3 Demographic correlations

	Scale	1	2	3	4	5
1	Age					
2	Sex	.05				
3	Marital	.70	.09			
4	Border	.05	-.05	-.01		
5	Class	.12	-.08	.03	-.10	
6	People	-.18	-.09	-.01	.03	-.01

N = 185 $r > .13$ ($p < .05$) $r > .17$ ($p < .01$) one-tailed

With respect to sex 61% of the sample were female. Partial correlations were calculated controlling for the age and sex on the demographic variables. Only class gained in significance ($r = .19$; $n = 114$; $p < .01$) with sex. The next section of the

results examines the factor structures of the ISEL and the ISSB.

Factor Analysis of the ISEL

The factor structure of the ISEL was analysed and compared with the previously described factor structure in chapter 3. A four factor structure was specified with a varimax rotation. The results are presented at table 4.4. The first factor had an eigenvalue of 8.15, accounted for 20.4% of the variance and was identifiable as the *Appraisal* subscale. The second factor had an eigenvalue of 2.33 and was identifiable as the *Tangible* subscale. The third factor had an eigenvalue of 2.04, accounted for 5.1% of the variance and was identifiable as the *Belonging* subscale. The fourth factor had an eigenvalue of 1.87, accounted for 4.7% of the variance and was identifiable as the *Self-Esteem* subscale. In total the four factors accounted for 36% of the total common variance. Cronbach alpha's for the subscales were in the range .63- .78. The four identified factors were correlated with the original factor structure (Cohen et al., 1985).

Table 4.4 Summary results of a factor analysis of the ISEL

Scale	Eigenvalue	%variance
xAppraisal	8.15	20.4
xTangible	2.33	5.8
xBelonging	2.04	5.1
xSelf-Esteem	1.87	4.7

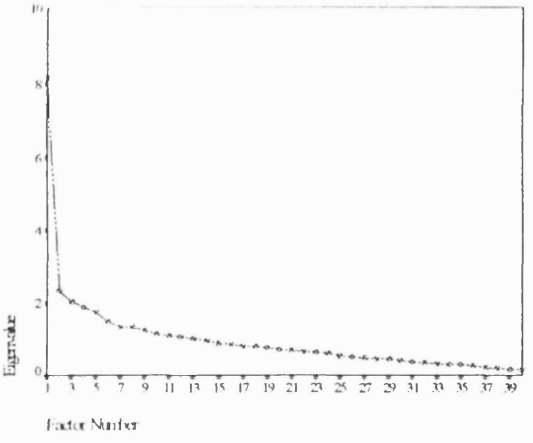

Figure 4.1 Scree Chart for ISEL

The high correlations between the factors (factorapp - Appraisal r=.89; factorbel - Belonging r=.94; factorsel -Self-Esteem r=.91; factortang - Tangible r=.99) confirms the use of the original factor structure proposed by (Cohen et al., 1985). Subsequent analyses used the proposed factor structure.

Factor Analysis of the ISSB

A three factor structure was specified with a varimax rotation. The results are presented at table 4.5. The first factor had an eigenvalue of 11.96, accounted for 29.9% of the variance and was identifiable as the *Emotional* subscale. The second factor had an eigenvalue of 2.7, accounted for 6.7% of the variance and was identifiable as the *Guidance* subscale. The third factor had an eigenvalue of 2.27, accounted for 5.7% of the variance and was identifiable as the *Tangible* subscale. In total the three factors accounted for 42.3% of the common variance. The Cronbach alpha's were in the range .71 - .90.

Table 4.5 Summary results of a factor analysis of the ISSB

Scale	Eigenvalue	%variance
xemotion	11.96	29.9
xguidance	2.70	6.7
xtangible	2.27	5.7

The high correlations between the factors (factoremo - Emotion r=.98; factorgui - Guidance r =.99; factortang- Tangible r=.91) confirms the use of the factor structure proposed by (Pretorius & Diedricks, 1993) Subsequent analyses used the proposed factor structure. The correlations between the comparison measures ISSB, ISEL, are given in table 4.6.

Table 4.6 Correlations between the ISSB and ISEL

Scale	α values	1	2	3	4	5	6	7	8	
1.Ibtot	.93									
2.Ibemotion	.89		.91							
3.Ibguidance	.90		.89	.69						
4.Ibtangible	.71		.72	.49	.54					
5.Iseltot	.89		.22	.33	.14	-.01				
6.Iselapp	.64		.28	.39	.20	.00	.80			
7.Iselbel	.74		.20	.30	.15	-.02	.86	.63		
8.Iselse	.62		.11	.17	.07	-.01	.75	.47	.54	
9.Iseltang	.78		.11	.20	.04	-.00	.79	.49	.57	.43
N=177-185		r >.13 (p<.05)		r >.18 (p<.01)		two-tailed				

Inspection of table 4.6 shows that the Cronbach alpha's for the $ISEL_{appraisal}$ and the $ISEL_{selfesteem}$ are lower than usually acceptable values and in similar range to those found in chapter 3 ($ISEL_{appraisal}$ =.67; $ISEL_{selfesteem}$ =.62). The results suggest that

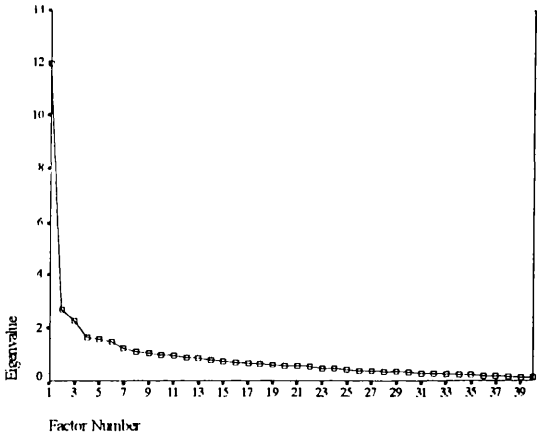

Figure 4.2 Scree chart for ISSB

these two subscales are potentially less reliable than previously reported. The $ISEL_{selfesteem}$ subscale in particular appears to be weak. The present study was a technical study of the properties of the scales therefore the two subscales were retained and used in the factor congruence analysis. The other Cronbach alpha's are similar to those found in chapter 3. In chapter 3 the correlation between the total scale ISEL and ISSB was r=.30, in the present study it is r=.22. The lower correlation, consistent with other studies, reflects that the ISEL and ISSB are measuring different aspects of social support. For example, $ISEL_{tangible}$ and $ISSB_{tangible}$

in chapter 3 correlated at r=.18, and in the present study at r=.00. A similar pattern of lower intercorrelations exists between the other subscales. One exception is the correlation found between the $ISEL_{appraisal}$ and $ISSB_{emotion}$ subscales, in chapter 3 the correlation r=.29 and in the present study r=.39.

The overall results indicate that it is appropriate to use the subscales rather than rely solely on the total scale scores. In chapter 3 and the current chapter a correlational analysis has been used to determine the relationship between the proposed and observed factor structures for both the ISEL and the ISSB. The correlational analysis has provided evidence for accepting the proposed factor structures. However, it is also relevant to identify whether the factor structures are consistent across the two studies currently reported. One measure of judging the similarity of factors composed of the same variables but different participants is that of the congruence coefficient (Burt, 1941). Two reasons for not using the correlation coefficient when obtaining the similarity between two series of factor loadings are given by Cattell (1978) as:

1. By method, the correlation coefficient (*r*) calculates deviations from the mean of each variable list, therefore *r* will record smaller positive loadings as negative deviations given the typical presence of predominantly large positive loadings. The sign of the absolute value of the loading contains salient information in addition to its magnitude. Hence, *r* will not give weight to similar signs in a loading series from two studies;

2. The factor loadings may rank in the same order on two factors but if one factor has a higher variance or larger mean size of loadings then *r* will not be different from the situation where the factors are the same size.

The *congruence coefficient*, r_c, in part, can more adequately represent the factor similarity. It is given by:

$$r_c = \frac{\sum_{j=n} b_{j1} b_{j2}}{\left[\sum_{j=n} b^2_{j1} \sum_{j=n} b^2_{j2} \right]^{1/2}}$$

where b_{j1} and b_{j2} are the loadings of the variable a_j on the two factors being compared.

The significance values used for the congruence coefficient are given by Cattell (1978). The calculated congruence values for the factors of the ISEL and the ISSB are given in table 4.7. The $ISEL_{self\text{-}esteem}$ scale because it had a low cronbach's alpha over the two studies and did not reach an acceptable level of congruence was not reported in further analyses.

Table 4.7 Congruence coefficients between subscales of the ISEL and ISSB

subscale	r_c	probability
ISEL		
appraisal	+.67	$p < .025$
belonging	+.77	$p < .01$
self-esteem	+.50	n.s.
tangible	+.94	$p < .001$
ISSB		
Issb-emotion	+.95	$p < .001$
Issb-guidance	+.97	$p < .001$
Issb-tangible	+.82	$p < .01$

Development of the Reciprocity Measure

The mean values of all the scale items, that is, both the give-values and the receive-values were calculated. These values are reported in tables 4.9 and 4.10. Inspection of the mean values suggests that a bias is evident with respect to the items. Equity theorists (Adams, 1963; Adams, 1965; Hatfield et al., 1979; McClintock et al., 1984; Walster, Bersheid, & Walster, 1973; Walster et al., 1978) have consistently argued that people will attempt to maximise their outcomes and minimise the costs of

their exchanges with others. Social exchange theorists have also posited such an assumption (Emerson, 1976). If the values of giving and receiving are broadly similar over the resources exchanged then such an assumption may be valid. However, if there is a difference in the value of the resources then the equation for inequality will vary according the resource exchanged. The latter observation still obtains even if it is a cognitive bias rather than an actual resource bias. The give-value scale and the receive-value scale asked participants to allocate upto one hundred points for each of the items. On the give-value scale only two items were allocated a mean value over fifty points namely: item 12, *Organise and pay for a celebratory party for them;* and item 28, *Make a loan of £500 over a year without interest.*

Ten items on the receive-value had allocated values over fifty points. They were:
item 2, *Be driven for an hour to an airport for a 6am flight*;
item 12, *Have a party organised and paid for you as a celebration*;
item 13, *Have your emotional problems listened to for over an hour*;
item 21, *Ask a friend to lie in order to defend your behaviour*;
item 22, *Have a friend house sit while you are on holiday for a week*;
item 28, *Borrow £500 over a year without interest*;
item 37, *When asked, give an honest opinion which may be hurtful*;
item 43, *Stay with you in a hospital accident department for hours*;
item 51, *Respond to an emergency request that inconveniences you alot*;
item 55, *Play a major role at a ceremonial event.*

In comparing the means of all the items there was a clear bias towards the give-values being lower than the receive-values. Only one item, item 10 *Borrow a commonplace thing (e.g., a calculator)* had an equivalent value. For all the other 65 items the receive-values were all higher than the give-value items. A measure of the distribution of scores compared to a normal distribution is kurtosis. Inspection of tables 4.8 and 4.9 show that the give-values have a greater tendency to positive kurtosis than the receive-values. For example, *post a letter for a friend while posting your mail* has a value of 19.8 for the give in comparison to 6.9 for the receive scale. Similarly, *make a loan of £5 for one week* has a value of 10.4 compared to 2.3 for *Borrow £5 for a week.* These findings suggest that people are more able to accurately value items that they give than they receive but that they place a higher value on

the receive items.

An initial exploratory factor analysis using principal components analysis was undertaken on the give-value items. An oblimin rotation was specified since it was anticipated that there would be substantial correlations between the items. The scree test was used to determine the number of factors to be extracted. Given that there were no benchmark studies to guide the present study a conservative approach was adopted to the item loadings with only loadings greater than .40 being considered. In the initial analysis Oblimin failed to converge in 25 iterations (Convergence = .00114).

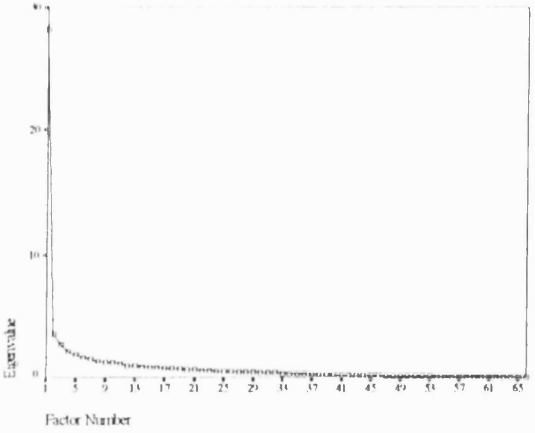

Figure 4.3 scree chart for give favours

Therefore, after inspection of fig. 4.3 three factors were extracted and a varimax rotation specified. The summary statistics are given in table 4.8.

Table 4.8 Summary results of a factor analysis on giving favours

Scale	Eigenvalue	%variance
Give-Factor 1	28.20	42.7
Give-Factor 2	3.53	5.4
Give-Factor 3	2.68	4.1

Further factor analyses specifying four and five factors failed to converge using a varimax rotation. The item loadings for each of the three factors are presented in table 4.9.

Table 4.9 3 factor solution of the Give-value scale

	X_{mean}	SD	Kurtosis	I	II	III
1.Post a letter for a friend while posting your mail	7.7	8.7	19.8			
2.Drive for an hour to an airport for a 6a.m. flight	46.7	25.1	-.86	.50		
3.Go to a mutually desired leisure event (eg a concert)	16.4	16.0	5.3			.56
4.Paint and hang wallpaper in a large living area	39.0	21.9	-.25	.64		
5.Buy a drink in a public house/nightclub	17.2	16.6	4.5			.67
6. Teach a friend how to replace a car/bicycle tyre	21.1	16.4	2.6	.43		.43
7.Listen to a friend being angry about a third person	22.4	19.4	3.4	.43		.49
8.Loan a CD/Tape over a weekend	13.7	13.4	6.8			.63
9.Move furniture into their home during a weekend	36.4	19.9	.08	.75		
10.Loan a commonplace article (e.g. a calculator)	12.6	16.5	11.56			.73
11.Empty a wastepaper basket into an outside bin	13.6	15.1	5.9			
12.Organise and pay for a celebratory party for them	50.6	24.2	-.79	.71		
13.Listen to their emotional problems for over an hour	32.0	23.1	.41	.49		.42
14.Show a friend how to use a cafetiere	11.1	12.0	9.5			.53
15.Wash and style their hair for a special occasion	24.6	19.7	2.8	.45		.57
16.Give advice on how to arrange their social life	21.5	20.1	3.8			.57
17.Pick up travel tickets from an agency on their behalf	23.8	17.0	.82	.42		.48
18.Listen to them talking about an intimate relationship	26.2	22.5	1.6			.53
19.Send a greeting card to acknowledge a significant date	19.9	19.1	3.6		.54	.49
20.Play a competitive game together	18.3	17.1	3.5			.64
21.Tell a lie in order to defend their behaviour	44.1	26.0	-.67	.47		
22.House sit while a friend is on holiday for over a week	38.7	23.3	-.49	.64		
23.Give them a book you no longer want	11.0	11.9	5.8		.61	.41
24.Collect a parcel on their behalf from a sorting office	18.9	13.7	3.1		.41	
25.Refrain from asking for the return of something borrowed	29.5	21.6	.12			.42
26.Invite a friend for a meal	24.9	18.5	2.3	.40	.51	
27.Give them a hug when they return from a holiday	15.6	20.6	4.5		.55	.49
28. Make a loan of £500 over a year without interest	59.0	27.9	-.99	.70		
29.Loan a catalogue which you obtained for your own use	18.0	17.0	2.8	.50		
30.Teach them how to play a new card game	13.0	13.3	11.8			.61
31.Listen to them talking about a third person (gossip)	17.8	18.7	3.8			.53
32.Water the plants while a friend is on holiday for a week	23.5	18.1	1.7	.44	.48	
33.Loan your car to them to attend an important interview	44.7	26.5	-.96	.63		
34.Drive them to a shop during the week	24.4	19.5	1.9	.42		.49
35.Help in their garden by mixing concrete/laying a lawn	41.0	23.3	-.38	.74		
36.Accompany them to a party as 'the friend'	27.5	20.1	.00	.43	.43	.41
37.When asked, give an honest opinion which maybe hurtful	41.5	25.3	-.79	.54		
38.Help complete a governmental form (e.g. tax return)	24.7	20.3	1.7	.57		
39.Write a reference for a job	32.3	22.6	.34	.63		
40.Loan an item of clothing for a special event	22.8	19.1	2.6	.48	.46	.45
41.Make all the arrangements for a joint holiday	43.2	23.7	-.85	.68		
42.Go shopping for a specific gift	28.5	20.0	.41	.43	.67	
43.Stay with them in a hospital accident dept. for hours	39.1	26.9	-.60	.56	.60	
44.Help them change a punctured tyre	23.5	18.0	.25	.52		
45.Look after a dog/cat while a friend is on holiday	29.8	20.6	1.2	.52		
46. Purchase items for a friend whilst shopping for yourself	17.6	18.2	4.3		.65	
47.Make a loan of £5 for one week	14.0	15.5	10.4			.52
48.Give an item of furniture that you no longer need	13.0	13.3	8.3		.50	
49.Assist in solving a personal problem over a weekend	28.3	20.7	1.2	.45	.50	
50.Lend a book that you have suggested they read	14.6	14.9	5.6		.51	.60
51.Respond to an inconvenient emergency request	41.8	26.4	-.84	.67	.40	
52.Loan equipment for a job/leisure pastime (e.g. drill/tent)	22.0	18.8	3.5	.51		.40
53.Make a telephone call on their behalf	20.6	16.5	1.4	.49		.41
54.Help move a large item (e.g. fridge/bed) elsewhere	24.5	18.5	1.6	.58		
55.Play a major role at a ceremony (e.g. Best Man)	36.8	27.1	-.39	.46	.48	
56.Visit the theatre/concert/gym because they want to go	29.4	19.7	-.59	.51	.55	
57.Rearrange an appointment with doctor/dentist for them	21.8	17.1	2.8		.65	
58.Offer advice on clothing when out shopping	16.4	16.1	5.3		.76	
59.Give an opinion to assist in their choice of home decor	16.7	14.5	2.9		.70	
60.Look after their children/aged relative for an evening	36.9	21.9	-.42	.59	.53	
61.Wash up after a meal that they had prepared	20.7	19.5	3.2		.61	
62.Hold their house key for tradesmen access during the day	20.3	16.8	2.0		.53	
63.Give advice over a lunch break on a relationship problem	22.5	20.3	1.8		.59	.50
64.Supply small amounts of groceries when they run out	17.7	18.1	4.8	.52	.56	
65.Telephone during the evening when they are unwell/upset	20.0	21.7	3.1		.72	
66.Record a programme on video or copy an audiotape for	16.8	16.8	4.9		.54	

N = 179 mean values

Table 4.10 3 factor solution of the receive-value scale

	X_{mean}	SD	Kurtosis	I	II	II
1. Have a letter posted by a friend	13.7	13.9	6.9			.44
2. Be driven for an hour to an airport for a 6am flight	55.6	23.1	-.90		.60	
3. Go to a mutually desired leisure event (eg a concert)	20.1	18.8	1.7			.55
4. Have someone paint and hang wallpaper in a large living area	44.2	21.4	-.61	.66		
5. Be bought a drink in a public house/nightclub	21.0	17.4	3.6			.57
6. Be taught by a friend how to replace a car/bicycle tyre	26.7	16.8	1.4	.46		.47
7. Be listened to by a friend when you are angry about someone	38.4	23.3	-.31		.45	.44
8. Borrow a CD/Tape over a weekend	16.6	13.9	4.0			.71
9. Have furniture moved into your new home during a weekend	46.0	20.8	-.55	.70		
10.Borrow a commonplace thing (eg a calculator)	12.9	13.5	8.95			.71
11.Have a wastepaper basket emptied into an outside bin	15.0	13.5	6.3			.59
12.Have a party organised and paid for you as a celebration	64.2	20.6	-.29	.70		
13.Have your emotional problems listened to for over an hour	53.5	23.7	-.77	.44	.46	
14.Be shown by a friend how to use a cafetiere	12.8	11.8	2.4			.66
15.Have your hair washed and styled for a special occasion	28.6	18.0	.71			.69
16.Be given advice on how to arrange your social life	18.8	17.4	2.2			.61
17.Have travel tickets picked up from an agency on your behalf	27.9	17.7	.60	.53		.48
18.Be listened too when talking about an intimate relationship	39.2	23.6	-.52			.49
19.Receive a greeting card to acknowledge a significant date	30.4	21.0	-.29		.49	.45
20.Play a competitive game together	20.0	15.3	1.4			.49
21.Ask a friend to lie in order to defend your behaviour	56.1	25.4	-.66	.61		
22.Have a friend house sit while you are on holiday over a week	52.7	22.8	-.70	.64		
23.Be given a book they no longer want	15.3	15.2	5.8			.45
24.Get a parcel collected on your behalf from a sorting office	24.8	15.5	.19	.53		
25.Refrain from asking for the return of something borrowed	33.2	20.9	.32		.40	
26.Be invited by a friend for a meal	36.9	19.8	-.06		.54	.42
27.Be given a hug when you return from a holiday	22.6	22.8	1.17		.54	.44
28.Borrow £500 over a year without interest	60.9	24.3	-.43	.59		
29.Borrow a catalogue which they have obtained for their own use	23.7	17.8	.53	.42		
30.Be taught how to play a new card game	16.4	13.5	3.8			
31.Have them listen to you talking about a third person (gossip)	19.6	18.5	3.9		.50	
32.Water your plants while you are on holiday for over a week	30.6	17.5	.36	.63		
33.Borrow their car to attend an important interview	49.7	23.9	-.80	.67	.51	
34.Be driven to a shop during the week	28.9	17.4	.18	.54	.41	
35.Help in your garden by mixing concrete/laying a lawn	45.2	20.9	-.44	.71		
36.Accompany you to a party as 'the friend'	39.5	20.9	-.71	.53	.57	
37.When asked, give an honest opinion which may be hurtful	50.3	25.1	-1.0	.46	.54	
38.Help you complete a government form (eg passport/tax return)	27.1	19.8	.92		.57	
39.Have them write you a reference for a job	40.0	22.9	-.29		.73	
40.Borrow an item of clothing for a special event	29.7	19.8	-.46		.74	
41.Have someone make all the arrangements for a joint holiday	48.1	22.7	-.83	.42	.61	
42.Go shopping for a specific gift for you	38.1	22.2	-.49		.72	
43.Stay with you in a hospital accident department for hours	56.6	24.9	-.87		.75	
44.Help you change a punctured tyre	30.9	20.7	-.28		.49	
45.Look after a dog/cat for over a week while you are away	37.3	21.6	-.35	.60	.43	
46.Purchase food items for you as part of their own shopping	25.1	18.3	.37		.62	
47.Borrow £5 for a week	21.6	18.4	2.3		.48	
48.Be given an item of furniture that they no longer need	22.5	17.1	1.6		.62	
49.Assist you in solving a difficult personal problem over a weekend	42.8	24.2	-.69		.70	
50.Borrow a book that they have suggested you read	19.8	15.2	.86		.58	.44
51.Respond to an emergency request that inconveniences them a lot	57.7	24.4	-.84	.56	.59	
52.Borrow equipment for a job or leisure pastime (eg drill/tent)	30.2	19.0	.92		.64	
53.Make a telephone call on your behalf	25.6	17.5	-.11		.65	
54.Help you move a large item (eg fridge/bed) to another place	31.3	20.1	.22	.42	.53	
55.Play a major role at a ceremonial event (eg Best Man at a wedding)	52.2	26.3	-1.0		.62	
56.Visit the theatre/concert/cinema/gym because you want to go	40.5	22.4	-.60		.61	
57.Rearrange an appointment with a dentist/doctor on your behalf	29.8	17.7	-.06		.55	
58.Offer advice about clothing when out shopping for a day	20.6	18.0	1.6		.69	
59.Give an opinion to assist in your choice of home decor	20.8	16.2	1.4		.55	
60.Look after your children/aged relative for an evening	44.0	22.4	-.61	.61	.46	
61.Wash up after a meal that you had prepared	27.3	19.9	.68		.43	
62.Look after your house key for tradesman access during the day	27.4	18.9	1.9		.42	.43
63.Give advice over a lunch break about a relationship problem	29.9	21	.33		.64	
64.Supply small amounts of groceries when you run out (tea/coffee)	23.3	16.8	1.1		.60	
65.Telephone you during the evening when your are unwell/upset	34.9	24.7	-.67		.58	.47
66.Record a programme on video or copy an audiotape for you	25.9	19.0	.34		.52	.43

N = 179 mean values

Table 4.9 shows that 2 items, that had item loading greater than .40, loaded onto all three factors: Item 36 *Accompany them to a party as 'the friend'* and item 40 *Loan an item of clothing for a special event.* The wording of these two items appeared to contain elements of social activity and tangible effort hence the loading across the three factors. As a consequence of the ambiguity in wording these two items were dropped from further analysis. The first factor had an eigenvalue of 27.38, accounted for 41.5% of the common variance and was labeled the instrumentality scale. The second factor had an eigenvalue of 4.04, accounted for 6.1% of the common variance and was labeled the sociality scale. The third factor had an eigenvalue of 2.58, accounted for 3.9% of the common variance and was labeled the guidance scale. The three factors accounted for a total of 51.5% of the common variance. It is recommended that in scale development only the minimum items as are necessary to map the underlying dimension should be retained (Nunnally, 1978). It was decided that by including only items loading at .50 and above there would be no loss of factor interpretableness. The cut off point ensured that the item loading shared at least 25% of the factor variance. The net effect in the reduction in scale items led to 78 items being considered rather than 132. For the newly created scales based on give-value Cronbach alpha's were for instrumentality, .94; for sociality, .93; and for guidance, .91. These are high alpha values. While the factor analysis showed that the give-values enabled a clear structure to be observed there is an obvious issue about the frequency of occurrence of each of the scale items. For example, item 1 on the instrumentality scale *Help in their garden by mixing concrete/laying a lawn* is a low frequency item. (The mean frequency was given as 1.34 std.dev.= .58; where 1= less than once per year). Item 1 on the sociality scale, however, *Loan a commonplace article (e.g. a calculator)* has a higher mean frequency (2.90 std.dev.= .92; where 2= at least once a year; 3= at least once a month.

Accordingly the factor structure of the give-value was used to determine the structure of the frequency scale and subsequent analyses are reported on using the frequency scale. The Cronbach's alphas for the new scales were for the give scale:

instrumentality, .83; for sociality, .79; and for guidance, .72. and for the receive: instrumentality, .80; for sociality, .78; and for guidance, .74. These alpha values are in the acceptable range. Table 4.11 reports the intercorrelational matrix for the six factors.

Table 4.11 Intercorrelations between instrumentality, sociality, and guidance factors

	α value	1	2	3	4	5
1. Instrumen(g)	.83					
2. Sociality(g)	.79	.42				
3. Guidance(g)	.72	.54	.66			
4. Instrumen(r)	.80	.56	.26	.43		
5. Sociality(r)	.78	.32	.59	.52	.54	
6. Guidance(r)	.74	.41	.43	.57	.57	.65

N = 181-185 $r > .14$ ($p < .05$) $r > .17$($p < .01$) two tailed

Inspection of table 4.11 shows a pattern of intercorrelations between the give and receive factors with higher correlations between the sociality and guidance factors than with instrumentality. The pattern is consistent with that found with the ISEL and the ISSB between tangible and other support resources. If the factors that comprise the reciprocity measure are identifiable as social support resources then they should correlate with the corresponding factors of the ISEL and the ISSB. The ISEL and the ISSB both measure support receipt, therefore larger correlations with the receive factors should be observed. Table 4.12 and table 4.13 report the results of the correlational analysis. The pattern of correlations was as expected from the simulation reported in chapter 2. Medium correlations in the present analysis have a power coefficient = .98. The receive factor correlations are larger than the corresponding give factor correlations with the index variables. Instrumentality(r) has a medium correlation with $ISSB_{tangible}$ as $r = .32$ (a small correlation with $ISEL_{tangible}$ .15) and a large correlation with $ISSB_{guidance}$ $r = .35$. Sociality(r) has medium correlations with $ISSB_{emotion}$ $r = .37$, $ISSB_{guidance}$ $r = .35$, and $ISSB_{appraisal}$ $r = 30$. Guidance(r) has a medium correlation with $ISSB_{emotion}$ $r = .41$, $ISSB_{guidance}$ $r = .34$, and $ISSB_{tangible}$ $r = .31$. On the basis of the correlational pattern Intrumentality(r); Sociality(r) and Guidance(r) are measuring enacted support rather than perceived

support. Instrumentality(g); Sociality(g) and Guidance(g) have smaller correlations with the index variables. Only Guidance(g) achieved medium correlations with $ISSB_{emotion}$ r=.30, and $ISSB_{guidance}$ r=.30. The overall pattern of correlations indicate that the receive factors are tapping different types of support. The give factors showed consistently weaker relationships than the receive factors. The effects were still maintained when partial correlations were calculated controlling for both age and sex. It may be argued that since the ISSB is a frequency based scale there is a potential confound in the present results. Common method variance might inflate the correlations but would not account for the difference in patterns. Further, the receive scales shared similar Cronbach's alphas to the receive scales but showed larger correlations with the index variables. Inspection of table 4.12 shows no correlation for Instrumen(g), Sociality(g) and Guidance(g) with Iseltang suggesting that these give factors are not measuring perceived tangible support.

Table 4.12 Correlations of the give factors and the ISEL and ISSB subscales

	α value	1	2	3
1. Instrumen(g)	.83			
2. Sociality(g)	.79	.42		
3. Guidance(g)	.72	.54	.66	
4. Iselapp	.64	.07	.17	.15
5. Iselbel	.74	.11	.21	.25
6. Iseltang	.78	-.02	.11	.09
7. Issbemo	.89	.20	.26	.30
8. Issbgui	.90	.24	.23	.30
9. Issbtan	.71	.23	.20	.22

N=181-185 r>.14 (p<.05) r>.17(p<.01) two-tailed

Table 4.13 Correlations of the receive factors and the ISEL and ISSB subscales

	α value	1	2	3
1. Instrumen(r)	.80			
2. Sociality(r)	.78	.54		
3. Guidance(r)	.74	.57	.65	
4. Iselapp	.64	.20	.30	.25
5. Iselbel	.74	.18	.23	.22
6. Iseltang	.78	.15	.13	.12
7. Issbemo	.89	.26	.37	.41
8. Issbgui	.90	.35	.35	.34
9. Issbtan	.71	.32	.27	.31

N=184-185 r>.13 (p<.05) r>.16 (p<.01) two-tailed

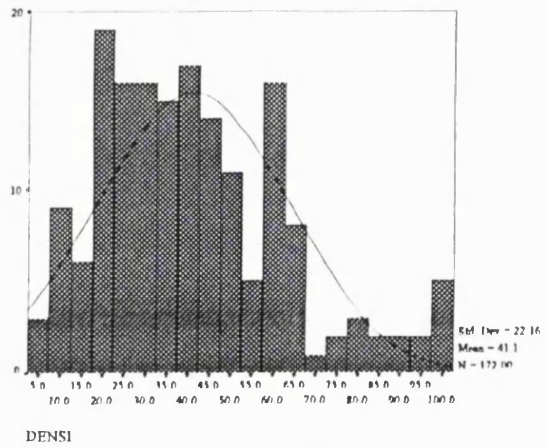

Figure 4.4 original distribution of network density scores

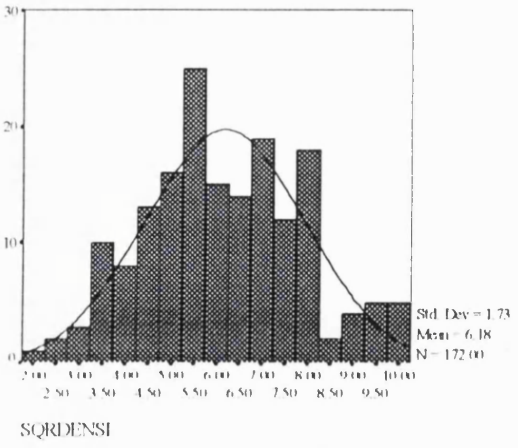

Figure 4.5 distribution following square root transformation of network density scores

The results indicate that the receive and give factors were tapping different aspects of the index variables and that the receive factors were more clearly related to enacted support than the give factors.

The give and receive factors and Network Density

Although network density has typically been considered as a dichotomous variable the present study also considered it as a continuous variable. Inspection of the distribution of the scores for network density indicated that they were negatively skewed (figure 4.4). Accordingly the distribution was normalised by using a square root transformation (figure 4.5). Correlations were then calculated for the give and receive factors controlling for network size and are presented in table 4.14.

Table 4.14 correlations between factors and density controlling for network size

	1	2	3	4	5	6
1. Density						
2. Instrumen(g)	.15					
3. Sociality(g)	.20	.36				
4. Guidance(g)	.15	.54	.65			
5. Instrumen(r)	.27	.69	.36	.47		
6. Sociality(r)	.22	.39	.69	.53	.50	
7. Guidance(r)	.23	.48	.54	.61	.57	.66

N = 164 r > .14 p < .05 r > . 20 p < .01

The correlations between the network density and the give and receive factors are small but reach a power value of 0.72. The intercorrelations between the give and

receive factors are in the order of r=.70 indicating that the factors share 49% of the variance. However, the pattern is that the receive factors have higher correlations than the give factors. The finding is intuitively interpretable. The receipt of support is more likely in a perceived high density than low density social network, irrespective of the number of people available.

As a dichotomous variable the median network density was used to split the datafile and correlations were calculated for each of the give and receive factors. The results are presented in table 4.15. The overall mean difference is 0.24.

Table 4.15 Factor intercorrelations as a function of high and low density (median split)

	1	2	3	4	5	6
1. Instrumen(g)		*.43*	*.27*	*.63*	*.44*	*.32*
2. Sociality(g)	.49		*.55*	*.75*	*.47*	*.67*
3. Guidance(g)	.60	.64		*.59*	*.48*	*.45*
4. Instrumen(r)	.51	.12	.49		*.51*	*.53*
5. Sociality(r)	.33	.48	.56	.52		*.59*
6. Guidance(r)	.40	.39	.62	.59	.71	

N= 87-88 80-84 high density in bold type

In the high density condition the pattern of intercorrelations between the give and receive factors is similar to that reported in table 4.10. In the low density condition the intercorrelations follow a different pattern and are predominantly lower. For example, the correlation between instrumen(g) and guidance(g) changed from r=.60 to r=.27.

Factor Analysis of the Eisenberger Reciprocation Ideology scale

Inspection of the scree chart figure 4.6 indicates that between five to six factors can be extracted. However, in keeping with the confirmatory nature of the study the original three factor structure was specified with a varimax rotation (Eisenberger et al., 1987) (the factors failed to rotate when an Oblimin rotation was specified). The results are presented in table 4.16. The first factor had an eigenvalue of 4.2, accounted for 18.3% of the common variance (10 items with loading > .30) and

was labeled the *reciprocation wariness* scale. The second factor had an eigenvalue of 3.31, accounted for 14.4% of the common variance (4 items loading > .30) and was labeled the *creditor ideology* scale. The third factor had an eigenvalue of 1.84, accounted for 8.0% of the common variance (4 items loading > .30) and was labeled *reciprocity-norm acceptance*. The three factors accounted for 40.7% of the total common variance. The scale items are given in table 4.16. Items 5, 7, 8, 9, 21 had loading of less than .30.

Table 4.16 Summary results of a factor analysis of the Eisenberger scale

Factor	αvalue	Eigenvalue	%variance
Reciprocation wariness	.74	4.20	18.3
Creditor ideology	.93	3.31	14.4
Reciprocity-norm acceptance	.49	1.84	8.0

In the both the original factor analysis and the present study *Reciprocation wariness* comprised items 10 - 19. In the original factor analysis *Creditor ideology* comprised items 1-9. In the present study only items 1-4 loaded onto the factor, items 5, 7, 8, 9 did not load on any factors and item 6 loaded onto the *Reciprocity-norm acceptance* factor. In the original factor analysis items 20-24 loaded onto the *Reciprocity-norm acceptance* factor. With the exception of item 21 all the other items loaded onto the third factor.

There were large correlations between the original and present factor structures (*Reciprocation wariness* r = .94; *Creditor ideology* r = .83; n = 178). The factor structure for the Reciprocation Ideology Questionnaire was confirmed by the present study. The pattern of Cronbach's alphas is similar to the original study (*Reciprocation wariness* α = .80; *Creditor ideology* α = .79; *Reciprocity-norm acceptance* α = .45). As a consequence of the low Cronbach's alpha the *Reciprocity-norm acceptance* factor was dropped from further analyses. Two scale scores were formed from the unweighted sums of the item loadings on each obtained factor, and used in all subsequent analyses.

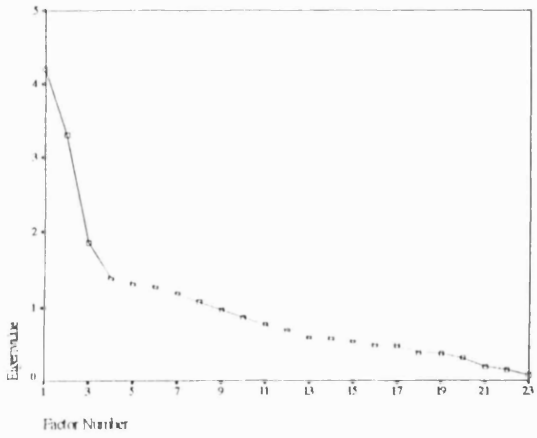

Figure 4.6 Scree chart for the RIQ

Table 4.17 Scale items of the Reciprocation-Ideology scale

Item	Factors		
	I	II	III
11. It generally pays to let others do more for you than you do for them	.78		
10. The most realistic policy is to take more from others than you give		.74	
12. In the long run, it's better to accept favours than to do favours for other	.72		-.30
19. You seldom benefit from giving a lot in a relationship with others		.67	
13. You shouldn't offer to help someone if they don't ask for your help	.65		
15. You should not bend over backwards to help another person	.65		
18. Asking for another's help gives them power over your life		.51	
14. You should help others so that latter they'll help you	.49		
17. You should help others without expecting something in return	-.41		-.39
16. I feel used when people ask favours of me	.37		
4. If a person does you a favour, it's a good idea to repay that person with a greater favour		.90	
1. If someone does something for you, you should do something of greater value for them		.89	
2. If someone does you a favour, you should do even more in return		.89	
3. If someone goes out of their way to help me, I feel as though I should do more for them than merely return the favour		.89	
20. How much you do for someone should depend on how well that person treats you	.36		.60
23.Your behavior towards other people should be unaffected by their behavior towards you			-.60
6.As a rule, I don't accept a favor if I can't return the favor			.56
22.People will do a lot for you, even if you do little or nothing in return			-.49
*5.It's not necessary to return favors quickly			
*7.If you frequent a certain restaurant, you should leave large tips to ensure good service			
*8. If a stranger helped you start your stalled car, you would not feel obligated to return the service			
*9. If someone returned a wallet you lost, you should try to do something in order to repay him/her			
*21.I don't like to be in another person's debt			

* loadings less than .30

Table 4.18 Correlations between Reciprocation Ideology Questionnaire and give/receive factors

	1	2	3	4	5	6	7
1. Eisencreditor							
2. Eisenwariness	.11						
3. Instrumen(g)	.03	-.01					
4. Sociality(g)	.06	-.03	.42				
5. Guidance(g)	.03	-.12	.54	.66			
6. Instrumen(r)	.08	.10	.56	.26	.43		
7. Sociality(r)	.08	-.01	.32	.59	.52	.54	
8. Guidance(r)	.01	.01	.40	.43	.57	.57	.65

N=178 r>.14 p<.05 r>.16 p<.01 two tailed

No significant correlations were found between creditor ideology and reciprocation wariness and the give and receive factors. The negative signs for reciprocation wariness are in the predicted direction for the give factors.

Belief in a just world

Correlations with a belief in a just world and the individual give and receive factors are presented in table 4.19.

Table 4.19 Correlations of the give and receive factors with the Just World Scales

	α values	1	2	3	4	5	6	7
1. Global JWS	.82							
2. Just World Scale	.74	.64						
3. Instrumen(g)	.83	.12	.12					
4. Sociality(g)	.79	.24	.14	.42				
5. Guidance(g)	.72	.21	.13	.54	.66			
6. Instrumen(r)	.80	.19	.07	.56	.26	.43		
7. Sociality(r)	.78	.17	.05	.32	.59	.52	.54	
8 Guidance(r)	.74	.17	.09	.40	.43	.57	.57	.65

N=179-185 r>.13 (p<.05) r>.18 (p<.01) two-tailed

The large correlation (r=.64) between the Global JWS and the Just World Scale suggests that the scales are measuring a similar construct, and is higher than the correlation r=.36 reported by Lipkus (1991). Inspection of table 4.18 shows a difference in the pattern of correlations between the Just World Scale, the Global JWS and the individual give and receive scales such that the receive correlations are lower compared to the give correlations. The differences cannot be attributed to the scale reliability as the Cronbach's alphas are similar for both the give and

receive scales. In order to test the significance of the difference between these dependent correlations t scores were calculated for the correlations using the procedure given by (Steiger, 1980). Although the differences were not significant higher t values were found for sociality within both the Just World Scale (t(1.36); n = 185; n.s.) and the Global JWS (t(1.07); n = 185; n.s) than for instrumentality and guidance. One conclusion drawn from the above is that the Just World beliefs depend on the perception of being a giver rather than a receiver.

Locus of Control

The next section looks at the relationship giving and receiving and the locus of control construct. The means and standard deviations of the Internal, Powerful Others, and Chance Scales are given in table 4.20 with comparison values from two similar populations. The results of the current study show a similar pattern of scores to those obtained previously with the internal scale showing the highest score.

Table 4.20 Means and Standard Deviations on the I, P, and C scales

Study	Sample	N	I		P		C	
			M	sd	M	sd	M	sd
(Beck, 1979)	undergrads	178	35.5	7.3	19.4	8.9	19.3	9.2
(Morelli & Morelli, 1979)	undergrads	132	35.0	5.3	24	5.7	23	6.2
Current study	**undergrads**	**185**	**32.4**	**5.7**	**24.5**	**5.3**	**25.6**	**5.4**

The correlational pattern of the locus of control scales with the give and receive scales are presented in table 4.21.

Table 4.21 Correlations between the give and receive scales and locus of control

	α values	1	2	3
1. Internal	.67			
2. Powerful others	.69	-.03		
3. Chance	.63	.02	.58	
4. Instrumen(g)	.83	.04	-.10	-.06
5. Sociality(g)	.79	.17	-.00	.07
6. Guidance(g)	.72	.12	-.01	-.01
7. Instrumen(r)	.80	-.01	-.10	-.10
8. Sociality(r)	.78	.11	.07	.06
9. Guidance(r)	.74	.06	.01	.02

N=184-185 r>.13 (p<.05) r>.16 (p<.01) two-tailed

One small significant correlation between internal locus of control and sociality(g) and a correlation nearly reaching significance for guidance(g) were found. No other correlations achieved significance. In part the lack of significant correlations could be attributed to the low Cronbach alpha's of the locus of control scale.

Marlowe-Crowne Social Desirability Scale

Table 4.22 correlations between Marlowe-Crowne and factors

	1	2	3	4	5	6
1. Marlowe						
2. Instrumen(g)	.01					
3. Sociality(g)	.00	.42				
4. Guidance(g)	-.03	.54	.66			
5. Instrumen(r)	.02	.56	.26	.43		
6. Sociality(r)	-.06	.32	.59	.52	.54	
7. Guidance(r)	-.07	.40	.43	.57	.57	.65

N=164 r>.14 p<.05 r>.20 p<.01 two tailed

Table 4.22 gives the correlations of the factors with the Marlowe-Crowne social desirability test. Squaring the largest of the obtained correlation coefficients indicates that the tendency to give socially desirable responses accounts for less than 0.0049% of the variance in the factor. Thus, all the factors are virtually independent of a set to give socially desirable responses.

Three constructed reciprocity measures

In the introduction it was argued that existing social support measures were not suitable as measures of reciprocity. Three "types" of reciprocity variable were constructed and their construct validity assessed with reference to the ISEL, ISSB, Reciprocation Ideology Scale, Just World Beliefs, Locus of Control and network density.

The first set of reciprocity variables constructed used the ratio concept inherent within equity theory. In general the receive values were higher than the give values and so for pragmatic reasons receive values were used as the denominator in the ratio. Thus, an index of 1 would represent the case where the give values equal the receive values. An index less than one would represent the case where the receive values are higher. Conversely, an index greater than 1 would represent the case where the give values are higher. Reciprocity measures were constructed for each of the support resources identified, that is, instrumentality, sociality and guidance. The Means and Standard Deviations are shown in table 4.23 and the correlations with ISEL, ISSB are presented in table 4.24.

Table 4.23 Means and Standard Deviations of the 'Ratio' reciprocity variables

Variable	Mean	Std Dev	Minimum	Maximum	N
Ratioins	1.09	.27	.12	3.75	182
Ratiosoc	1.05	.18	.07	1.93	182
Ratiogui	1.15	.32	.67	3.67	180

Table 4.24 Correlations of the 'ratio' reciprocity variables, ISEL, ISSB

	1	2	3	4	5	6	7	8
1.Ratioins								
2.Ratiosoc	.48							
3.Ratiogui	.23	.29						
4.Iselapp	-.26	-.20	-.16					
5.Iselbel	-.22	-.07	-.01	.63				
6.Iseltang	-.28	-.06	-.05	.49	.58			
7.Issbemo	-.05	-.12	-.15	.39	.30	.20		
8.Issbgui	-.10	-.13	-.09	.20	.15	.04	.70	
9.Issbtan	-.04	-.06	-.10	.00	-.02	-.01	.49	.54

N= 169-185 r > .15 (p < .05) r > .20 (p < .01) two-tailed

Inspection of table 4.24 as expected shows predominantly negative correlations with the measures that would be expected given that the ISEL and ISSB measure received support resources and that the reciprocity measure has been calculated as giving social support resources. The $ISEL_{appraisal}$ shows low to moderate significant correlations with all the ratio reciprocity variables (r = -.16 - -.26). The ratio reciprocity variable (instrumentality) shows significant correlations with all the ISEL subscales but no correlation with the ISSB. If it is accepted that the distinction between the ISEL and the ISSB is that the former measures perceived social support and the latter enacted social support then the ratio variable (instrumentality) could be labeled as a perceived reciprocity variable. The moderate correlation with the tangible subscale of the ISEL is consistent and suggests that perceived support is being measured.

The second set of reciprocity variables constructed were based on difference scores. In chapter 2 it was argued that difference scores present considerable difficulties in interpretation. Three difference scores were computed by subtracting the receive factor from the give factor for each support resource. A positive difference value means that more is given than is received. The greater the difference the more imbalance between giving and receiving. Table 4.25 gives the means and standard deviations of the difference scores. Table 4.26 reports the correlations with the ISEL and ISSB. Table 4.25 shows that Diffsoc (the difference in sociality factor scores) has almost a zero mean value indicating that people give as much as they receive. However, Diffsoc also has the largest range of values from -2.79 to 1.07.

Table 4.25 Means and Standard Deviations of the 'Difference' reciprocity variables

Variable	Mean	Std Dev	Minimum	Maximum	N
Diffins	.10	.32	-2.00	1.47	182
Diffsoc	.09	.40	-2.79	1.07	182
Diffgui	.22	.39	-.80	1.80	180

Table 4.26 Correlations between Reciprocity difference scores and ISEL and ISSB

	1	2	3	4	5	6	7	8
1.Diffins								
2.Diffsoc	.42							
3.Diffgui	.26	.36						
4.Iselapp	-.12	-.13	-.12					
5.Iselbel	-.05	-.01	.05	.63				
6.Iseltang	-.17	-.02	-.04	.49	.58			
7.Issbemo	-.02	-.10	-.14	.39	.30	.20		
8.Issbgui	-.06	-.11	-.06	.20	.15	.04	.70	
9.Issbtan	-.04	-.06	-.11	.01	-.02	-.01	.49	.54

N= 169-185 r >.15 (p<.05) r>.20 (p<.01) two-tailed

Inspection of table 4.26 shows that only the instrumentality 'difference' reciprocity variable shows low negative but significant correlations with the tangible subscale of the ISEL (-.17). The other correlations fail to achieve significance.

The third set of reciprocity variables constructed were based on the multiplicative value of the give and receive factors by support resource. Table 4.27 gives the means and standard deviations of the multiplicative scores. Table 4.28 reports the correlations with the ISEL and ISSB.

Table 4.27 Means and Standard Deviations of the multiplicative reciprocity measure

Variable	Mean	Std Dev	Minimum	Maximum	N
Multins	2.49	1.00	.60	7.43	182
Multisoc	5.92	1.92	.64	12.24	182
Multigui	4.57	1.56	1.10	9.00	180

Table 4.28 Correlations between Reciprocity multiplicative scores and ISEL and ISSB

	1	2	3	4	5	6	7	8
1.Multins								
2.Multisoc	.45							
3.Multigui	.57	.72						
4.Iselapp	.13	.23	.22					
5.Iselbel	.14	.22	.24	.63				
6.Iseltang	.06	.11	.11	.49	.58			
7.Issbemo	.24	.35	.41	.39	.30	.20		
8.Issbgui	.33	.33	.38	.20	.15	.04	.70	
9.Issbtan	.31	.27	.32	.01	-.02	-.01	.49	.54

N= 169-185 r >.15 (p<.05) r>.20 (p<.01)

Inspection of table 4.28 shows that the multiplicative reciprocity measure has larger correlations with the ISSB compared to the ISEL. In particular there are medium correlations between Multgui and $ISSB_{emotion}$ r = .41; Multigui and $ISSB_{guidance}$ r = .38 and Multigui and $ISSB_{tangible}$ r = .32 (All these correlations have a power value greater than .8).

In contrast Multigui and the ISEL subscales have lower correlations. The difference in the correlation between Multigui, $ISSB_{emotion}$ and $ISEL_{belonging}$ failed to reach statistical significance at the .01 level (t = 2.6) but did so at the .05 level (t = 2.28; N = 185; $p < .05$; two-tailed). The multiplicative reciprocity measure appears to correlate with enacted rather than perceived support, an opposite effect to that seen in the ratio reciprocity measure.

Table 4.29 Correlations between density and reciprocity measures controlling for network size

	1	2	3	4	5	6	7	8	9
1. Density									
2. Diffins	-.09								
3. Diffsoc	-.01	.14							
4. Diffgui	-.10	.22	.34						
5. Ratioins	-.08	.98	.15	.24					
6. Ratiosoc	-.02	.15	.98	.36	.16				
7. Ratiogui	-.13	.17	.23	.87	.18	.26			
8. Multins	.22	.23	-.15	-.05	.19	-.11	-.04		
9. Multisoc	.23	.02	.02	-.04	-.01	-.02	-.09	.43	
10. Multigui	.23	.11	-.02	-.08	.09	-.03	-.20	.59	.72

N = 164 $r > .14$ $p < .05$ $r > .20$ $p < .01$ two tailed

Table 4.30 reports the correlations between the constructed reciprocity measures and the criterion measures putatively selected to assess construct validity. All three types of reciprocity measure fail to correlate with the criterion measures.

Table 4.30 Correlations between the constructed reciprocity measures and the criterion measures

	EisencreEisenwar		JWS	GJWS	LCC	LCINT	LCSPOW
1.Ratioins	-.10	-.16	.11	-.07	-.03	.04	-.05
2.Ratiosoc	-.05	-.06	.11	.07	-.02	.05	-.11
3.Ratiogui	-.04	-.18	.04	.02	-.01	.03	-.00
4.Diffins	-.05	-.13	.08	-.06	.05	.07	.00
5.Diffsoc	-.01	-.01	.09	.08	.02	.07	-.08
6.Diffgui	.02	-.15	.04	.04	-.03	.07	-.02
7.Multins	.06	.06	.09	.15	-.09	-.02	-.12
8.Multisoc	.10	-.03	.12	.21	.08	.16	.05
9.Multigui	.04	-.05	.13	.20	-.00	.09	-.01

N= 169-185 r >.15 (p<.05) r>.20 (p<.01) two tailed

Marlowe-Crowne Social Desirability Scale

Table 4.31 Correlations between Marlowe-Crowne and reciprocity measures

	1	2	3	4	5	6	7	8	9
1. Marlowe									
2. Diffins	.00								
3. Diffsoc	.08	.42							
4. Diffgui	.06	.26	.36						
5. Ratioins	.00	.86	.35	.28					
6. Ratiosoc	.08	.43	.96	.37	.48				
7. Ratiogui	.04	.21	.27	.87	.23	.27			
8. Multins	.02	.21	-.06	-.07	.06	-.07	-.06		
9. Multisoc	.03	.08	.11	-.02	-.04	-.02	-.07	.44	
10. Multigui	-.05	.10	-.02	-.12	.08	-.03	-.22	.57	.72

N=164 r>.14 p<.05 r>.20 p<.01 two tailed

Table 4.31 gives the correlations between the reciprocity measures and the Marlowe- Crowne social desirability scale. All the measures are virtually independent of a set to give socially desirable responses.

DISCUSSION

The present chapter had three specified aims. The first aim was to develop a reciprocity measure using the framework provided by the social support literature. Reciprocity was assumed to have two distinct aspects (give and receive). On the

basis of the social support literature it was predicted that there should be larger correlations between received social support measures and the receive aspect of the reciprocity measure than with the give aspect. From the results of tables 4.11 and 4.12 the average correlation was calculated for the give and receive factors across both the ISEL and the ISSB. The results are given in table 4.32.

Table 4.32 Average correlations between the ISEL, ISSB and give/receive factors

	Give factors	Receive factors
ISEL	0.13	0.20
ISSB	0.24	0.33

As hypothesised the results show larger correlations between the receive factors and the receive factors of the ISEL and ISSB. The overall correlations are larger with the ISSB, a measure of enacted support, rather than the ISEL, a measure of perceived support. The Cronbach alpha's are higher for the ISSB than for the ISEL (table 4.5) but the variation is not sufficient to account for the difference. In order to consider whether a similar effect occurred with the constructed reciprocity measures the average correlations were obtained from tables 4.24, 4.26 and 4.28. The results are presented in table 4.33.

Table 4.33 Average correlations between the ISEL, ISSB and the three reciprocity measures

	Ratio	Difference	Multiplicative
ISEL	0.15	0.08	0.16
ISSB	0.09	0.08	0.33

Interestingly the average correlations depend on the way that reciprocity is calculated. When a Ratio measure is calculated then the ISEL has a larger correlation than the ISSB whereas for the Multiplicative measure the ISSB has the larger correlation. For the Difference measure the average correlations between the ISEL and ISSB are the same.

For the difference scores a partial explanation is with the reduction in scale

reliability that occurs when two factors are subtracted. For example, in the present study the highest alpha value for the factors found for instrumentality (table 4.10: 0.83; 0.80) is attenuated to 0.57 for the difference score (with the between factor correlation of 0.56). Hence, the use of a difference score requires that both factors in the present study needed to have an alpha value of at least 0.92 to achieve an alpha value of 0.81. However, the pattern for the Ratio and Multiplicative measures remains. The ISEL correlates with both the Ratio and Multiplicative measures though the ISSB has a larger correlation with the Multiplicative measure. The result is not artefactual in that both the Ratio measure, calculated with the receive factor as denominator, and the Difference measure, subtracting the receive factor from the give factor, have negative correlations with the ISEL and the ISSB as expected. The present result suggests that the way in which reciprocity is calculated **does** materially change the relationship with the outcome measures employed and that a difference score potentially negates the measurement of reciprocity.

The support resource itself may also need to be considered in the calculation. Current conceptualisations implicitly consider reciprocity as a linear variable whereas the present results indicate that there are differences both in process, that is, in giving and receiving, **and** in the nature of the support resource under consideration, that is, *Instrumentality, Sociality and Guidance.* Inspection of tables 4.23, 4.25 and 4.27 reveal a trend with respect to the support resource. For the Ratio and Difference measures *Instrumentality* and *Sociality* are similar with respect to their mean values and suggest a balanced relation. For *Guidance* the means are positive and indicate a non-balanced relation. For the Multiplicative measure *Instrumentality* has a lower mean and less variation than both *Sociality* and *Guidance.* The similarities between the Ratio and Difference measures are also reflected in the intercorrelations between the support resources themselves (table 4.24 and 4.26) that are lower than those for the Multiplicative measure (table 4.28). Thus, the support resource itself may influence the reciprocity measure calculation. The latter possibility has not been considered by the current published literature.

An interpretation might be that support resources that can be accurately valued are more likely to exist in a balanced relation. For example, valuing instrumental activities is likely to be easier than that of social activities. Therefore, it could be argued that the greater possibility of unequal relations provides a mechanism for the maintenance of social interaction. In contrast if a known value favour is reciprocated then the relationship is once more in balance and no further interaction is needed.

A theoretical issue raised by the present study is that of the cognitive mechanism used by participants to assess value. The results indicate that there is a cognitive bias to value received favours higher than favours given (tables 4.8 and 4.9). The bias is skewed towards items that appear on the *Instrumentality* factor and can be estimated in financial terms. Intuitively an explanation could be that since the commonly agreed social norm is that you should repay favours the bias to undervalue favours given would predisposed people to reciprocate. The higher receive value would always ensure that a person perceived that they were overbenefited in social exchange. The presence of a social norm in the present study is found in the significant correlations with the Global Just World Belief scale and Just World Belief scale (table 4.19). However, in terms of frequency the cognitive bias for participants in the present study was to perceive that they gave more than they received. Thus, the lower valued favours tended to have the highest frequency and were more frequently given. It may be that while there may be a cognitive mechanism for value, and in particular received value, it is not certain that there is a cognitive mechanism for balancing giving and receiving. A limitation of the present study is that it did not ask participants to state whether they perceived their relationships as balanced. In equity theory relationships are most satisfying when they are balanced (Walster et al., 1978). The current results indicate that if the favours are valued differently when given to when they are received then it is unlikely that a perceived balance will ever be achieved (Except for the instance where there is only one relationship).

A further metric of translating an equivalence system would need to be in place, for example, that three units of instrumentality are equivalent to one unit of sociality. Such a process would add a layer of cognitive complexity that would reduce the parsimony of the explanatory process. A similar problem is faced by social exchange theory (Homans, 1974) where the continuation of an exchange relationship is contingent on the individual perceiving that she is overbenefitted. If the cognitive bias is present then the relationship would never cease because the perceived received value would always lead to an overbenefitted relationship. However, it is known that relationships do end and in particular for those in disadvantaged groups (Dowd, 1975). An alternative to equity theory and social exchange theory is to consider the possibility of a dimensional norm of reciprocity related to the density of the social network. While significant correlations were found for the give and receive factors these correlations were attenuated in the Ratio and Difference reciprocity measures. The pattern of correlations between the factors and network density suggests that the relationship is stronger with the receive factors (table 4.13). A limitation of the present study did not discriminate between family and friends so it is not possible to eliminate the possibility of family members being responsible for the network density. However, given that the participants were predominantly away from their home environments the presence of family members is likely to be low. Further evidence that the give and receive factors are not just social support measures is given by the absence of any correlation between network density and both the ISEL and ISSB given in table 4.34.

Table 4.34 Correlations between network density and the ISEL and ISSB

	Iselapp	Iselbel	Iseltang	Issbemo	Issbgui	Issbtan
Density	-.06	.01	-.00	.04	.08	.13
N=168	r>.14 p<.05					

The argument is that individuals who perceive themselves as being high density networks will engage in more reciprocal relations than those in low density

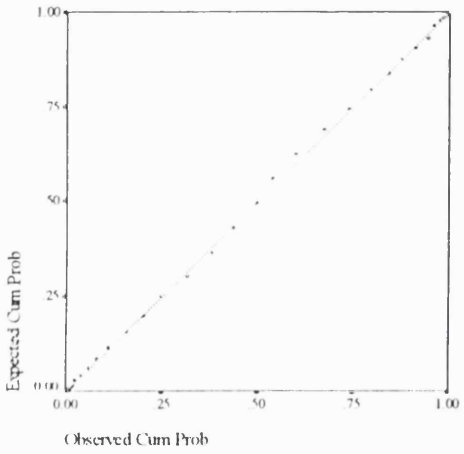

Figure 4.7 Normal P-P plot of sociality(r)

networks. The loss of any correlation in the Ratio and Difference constructed reciprocity measures is a result, in part, of the measurement problem that the figures will tend to one or zero respectively and therefore remove the variation in reciprocity.

The second aim of the study was to assess the psychometric properties of the reciprocity measures. The give and receive factors had acceptable psychometric properties. There was no evidence of ceiling or floor values in the factors. The factors were normally distributed, for example, figure 4.7 shows the normalised P-P plot of *Sociality(r).*

The Cronbach alpha's of the factors needed to be higher for the calculation of the difference reciprocity measure as discussed in chapter 1. It was found that the relationship of the reciprocity measures with the ISEL and ISSB varied as a function of the calculation method.

The third aim of the study was to assess the construct validity of the created reciprocity measures with selected index variables. Only the Multiplicative reciprocity measure showed small significant correlations with the GJWS and Internal Locus of Control. Overall the pattern of relationships indicated that the Ratio and Difference reciprocity measures were similar and separate from the

Multiplicative reciprocity measure. The correlations between the three measures followed a similar pattern.

The study was an exploratory technical examination of reciprocity measurement. The examination is moderated by the use of a student population with respect to specific outcomes.

Two other major limitations of the study were the failure to ask questions specifically relating to equity theory outcomes and to control for family/friends composition in the social network.

The results suggest that reciprocity varies both as a function of the calculation method and also the support resource. The significance of the finding is that current studies have typically employed difference score measurement. The results indicate that there are potentially a series of reciprocity scales. The three current factors, instrumentality, sociality and guidance have been distinguished and have acceptable factor loadings and Cronbach alphas. In the next chapter further development of the reciprocity construct is undertaken.

Chapter 5 Development of the reciprocity scale: Relations with family and friends

INTRODUCTION

Chapter 4 developed a reciprocity measure comprised of 72 items divided into two scales of giving and receiving. Within each of these two scales a further three subscales labeled instrumentality, sociality and guidance were identified with reference to existing social support measures. The preliminary development of the scale took no account of the relationship between the giver and receiver. However, this is a potential bias in social exchange between family and friends. In the literature review (chapter 2) some of the biases were defined though existing assessments of reciprocity did not address them or suggest how they might be controlled. Effects of the relationship might be shown directly, e.g., as a function of kinship, and also indirectly, as a function of the higher social network density that occurs in family structures.

Social exchange theory has attempted to explain social behaviour as distinct from purely economic exchange Homans (1958; 1961). Explanations based on economic exchange were argued to be deficient in that an equivalent reciprocal response needed to occur over time in order to maintain the relationship. Social exchange theory assumes that when one person does another person a favour there is a general expectation of a future return, although its exact nature is definitely *not* stipulated in advance (Blau, 1964). While within social exchange theory the nature of the resources exchanged has been distinguished, e.g., along the two dimensions of particularism and concreteness (Foa & Foa, 1975) the effect of role relations has had little consideration.

Adams (1963) developing equity, or more precisely, inequity theory argued that the presence of inequity created tension within a person proportional to the magnitude of the inequity observed. The created tension then drove the person to

find a way(s) that would reduce this tension. One way of reducing the tension was to modifying actual or perceived reciprocal relationships:

> "Person may increase, decrease or distort the inputs and outcomes Others, or force Other to leave the field" (Adams, 1963: p.429).

Inequity was present when the perceived ratio of outcomes to inputs compared to the ratio of the Other person's outcomes to inputs were unequal. Adams (1965) suggested that both parties to the relationship would use a similar underlying metric of absolute values although they would use personal, hence, relative values in the weighting process with respect to individual transactions. By concentrating on value, even with the possibility of different utilities attached to them, the underlying basal rates of the input and outcome resources were not considered. These basal rates are linked to the role relation.

Additionally, if there is an interaction between value and frequency on the perceived value, an intuitively appealing assumption, then different perceived values would be predicted even for same fixed value resources. For example, it is conceivable that someone receiving a bunch of flowers weekly would attribute it a lower value than if the flowers were received only once a year. The inherent economic value of the flowers remains the same to both giver and receiver, although there would be different attributions as to the psychological value. The argument can be taken further by considering different scaling dimensions for inputs and outputs. For example, substitution effects, where types of resources are interchangeable, or limiting effects where the absolute number of dimensions used by one person are less than those of another person may also contribute to differential values of inputs and outputs.

A further criticism of equity theory is that a ratio relationship itself may not obtain for all inputs and outcomes. For some social exchanges there may be a difference (or multiplicative) process operating in the resource relationships. An

example of a potential difference is that of listening to a friend being angry about another friend. It is unlikely that a ratio criterion would be used to evaluate the cost of giving the favour.

However, although there have been subsequent elaborations of equity theory these have only modified the original formulation with the addition of minor parameters (e.g., Walster et al., 1978) or more complex equity equations (Harris, 1983). Essentially the original version of equity theory continues to be used as an explanatory framework (van Dierendonck, Schaufeli, & Sixma, 1994).

Equity theory has not be extended to address the relationship between functional resource exchange and the social structure in which social exchange occurs. While social exchange occurs between dyads, the external social structure exerts considerable influence (e.g., Kapferer, 1969; Uehara, 1994). In particular the analysis of power as the capacity to acquire resources has been shown to be dependent on the pattern of social relationships rather than on the characteristics of the participants themselves (Thye, Lovaglia, & Markovsky, 1997).

These theories, however, still depend on exchange relations that involve negotiated agreements between two people.

Extending equity theory into social relationships does pose conceptual difficulties. For example, in social network analysis lists of personal network members are generated by three main methods: asking individuals who they are emotionally close to (affective relations); who they exchange things with (specific exchange relations) and who occupy positions in their social structure (role relations). A consistent finding is that when the specific exchange method is used a higher number of names are generated than in response to the other two methods (van Groenou et al., 1990). Overlaps exist between the sets of names given and in the quoted study 46% of members were common to both the exchange and affective approach, and 73% of the latter were included in the exchange network. Equity

theory would predict that the number of exchange relationships is proportional to the number of balanced relationships that are present. Using the exchange method would therefore be a methodological confound.

Both social exchange or equity theory also need to account for the resources exchanged and the different rates of correspondence in reporting exchange as function of the role relation. Shulman (1975) in a study of the reliability of agreements over five types of exchange found that agreement were less common for less close ties though the overall percentage agreements were in the range 55-72%.

Shulman (1975) also reported that there was a tendency for both parties to the exchange to claim that they gave more than they received though this finding was not elaborated upon. A similar finding was reported in chapter 4.

Social networks have a degree of stability and thus can exert effects on the dyadic relationship. van Groenou (1990) compared the three methods by which participants named members of their social networks and found, unremarkably, after a four week interval that the average percentage network members named was higher for the role relations (88%) than for specific exchange (74%) with the affective approach in the middle of the range (78%). The relative stability of kin can, in part, account for the development of a communal orientation. The lower stability of the social network at the exchange level is assumed to reflect a pattern of social association with people for whom exchange relations are the norm. The finding that social networks have high stability has been supported by several other studies (e.g., Barrera, 1980; Fischer et al., 1986; Sarason et al., 1987a).

There is strong evidence to show that people distinguish between kin and non-kin relationships when considering the time frame for reciprocity (Clark & Mills, 1979; Clark et al., 1986; Clark, Ouellette, Powell, & Milberg, 1987). In a related but separate line of research, delay, *per se*, in returning a favour reduces the

likelihood that the favour will be reciprocated between people who do not know each other (Burger et al., 1997). Consistently reported findings are that behaviours called for by exchange norms (more likely with non-kin), e.g., repaying favours, requesting repayments, keeping track of inputs in joint tasks are less evident in communal (more likely with kin) relationships.

Clark (1987) attributed the adoption of a communal orientation to both situational variables and individual differences. Although relationships were differentiated by kin and non-kin, no control was made for length of time that the relationships had existed, though by their implicit nature kin relationships are of a longer duration.

The difference between exchange and communal orientations would be reflected as an individual difference variable, namely a cognitive bias in reciprocity. An *exchange orientation* would be reflected by a perceived balance in giving and receiving with reference to a relationship and a *communal orientation* would be seen in an unbalanced relationship. An advantage over the latter approach is that it removes the need for invoking a specific external referent (e.g., Walster et al., 1978)

Specific Hypotheses

Three specific hypotheses were generated based on the above discussion:

1. That irrespective of role relation, based on the finding in chapter 4, the mean receive values of favours would be greater than the give values and that the mean give frequencies would be greater than the receive frequencies;

2. That there would be a stronger relationship between unbalanced reciprocity and family members than friends and conversely a stronger relationship between balanced reciprocity and friends than family;

3. That there would be a positive and significant correlations with reciprocity

(instrumentality; sociality; guidance) and social network size (on the assumption that more reciprocal relationships tend towards larger social networks).

METHOD

Participants

Participants were 99 first year undergraduates living in a residential hall provided by a higher educational establishment in London. They ranged in age from 19-24 years with the mean being 19.67 years (std.dev.=0.95years). 63 per cent of the participants were female. All the population reported that they were single.

Instruments

The 39 item reciprocity questionnaire developed in chapter 4 was used. The questionnaire was divided into two parts of favours received and favours given. The original questionnaire was modified such that participants were not asked to allocate a points value between zero and a hundred for each item but rather use a six point likert scale with 1=low value and 6=high value. A six point scale was used following the finding in chapter 4 that the highest mean value for the receive items was 64 points. The four point frequency likert scale used in the original questionnaire was retained (coding 1=less than a year; 2=at least once a year; 3=at least once per month; 4=at least once per week).

A second measure (the relationships list) was created which asked participants to list names of people with whom they had exchanged social contact in the past two weeks. Examples given of social contacts were family, friends, colleagues.

In a second column participants described their relationship to the person listed. Four further columns then requested participants to indicate whether or not they

gave "big favours" or "small favours" and correspondingly received "big favours" or "small favours" for each of the people listed. A maximum of 25 people could be listed although it was clearly stated in the instructions that the grid did not have to be fully completed. Marsden (1990) reviewed the methodology of social network size and recommended that the study design should not constrain the network size to be identical for all participants. The rationale was that if the typical personal social network size taken as 12 people with a standard deviation of 6, then two standard deviations would be significant departure from the mean.

Procedure

Participants completed the questionnaires in several group sessions of about 45 minutes. The reciprocity questionnaire was randomly allocated in two parts. The second part was given after both the return of first part and completion of the relationships list measure. All questionnaires were completed with very few missing data points. The rationale given at the time of the data collection was that of a study about favours within personal relationships. Participants were invited to attend one of two debriefing sessions about the rationale for the study arranged in advance of the data collection.

RESULTS

Demographic Results

Correlations between the demographic variables are presented in table 5.1. As all the participants reported that with respect to marital status they were single this variable dropped from the calculations. The population characteristics are similar to those reported in chapter 4.

Table 5.1 Demographic correlations

	Scale	1	2	3	4
1.	Age				
2.	Sex	.00			
3.	Border	.08	-.03		
4.	Class	.09	-.08	.16	
5.	People	-.28	-.11	-.01	-.01

N=99 $r > .16$ $p < .05$ $r > .23$ $p < .01$ one-tailed

Partial correlations were calculated controlling for sex on the demographic variables. No significant changes occurred in the correlations.

Reported Values between giving and receiving

It was hypothesised that the mean receive values would be higher than the mean give values for the scale items. Inspection of the mean values of the current population confirmed that hypothesis. Table 5.2 shows t-tests for paired samples of each item value of the reciprocity scale. A negative mean value represents the case when the mean give value is lower than that of the mean receive value. A mean of zero indicates that the mean give value is not significantly different from the mean receive value. Two tailed significance levels are reported.

Inspection of table 5.2 shows that thirteen items had mean give and receive values that were **not** significantly different. They were: *Gvalue1:Loan an item of clothing for a special event*; *Gvalue7:Paint and hang wallpaper in a large living area for them*; *Gvalue9:Hold their house key for tradesman access during the day*; *Gvalue10: Listen to them talking about a third person (gossip)*; *Gvalue11:Stay with them in a hospital accident department for hours; Gvalue14:Look after their children/aged relative for an evening*; *Gvalue18:Loan your car for them to attend an important interview*; *Gvalue19:Make all the arrangements for a joint holiday; Gvalue23:Make a loan of £500 over a year without interest*; *Gvalue24:Wash and style their hair for a special occasion; Gvalue25:Give them a book you no longer want*; *Gvalue27:Loan a CD/tape over a*

weekend; Gvalue:33Organise and pay for a celebratory party for them. A possible explanation for the lack of a mean difference in these items is that participants were able to "cost" both the giving and receiving of these activities more precisely. For example, *Gvalue23:Make a loan of £500 over a year without interest* had a mean give value of 4.90 (std.dev.= 1.42) and a mean receive value of 4.95 (std.dev. =1.51). Given that the highest possible value was 6.0 then these high ratings reflected the perceived high value of the item. However, the non significant mean difference (X=-0.03, t(92) = -0.19, n.s.) suggested that the perceived cost of the item was the same for giving and receiving.

For lower valued items evidence for a scaling system is also present. *Gvalue25:Give them a book you no longer want* the item had a mean give value of 2.48 (std.dev.= 1.43) and a mean receive value of 2.75 (std.dev.=1.31) that resulted in a non significant mean difference (X=-0.27, t(95) = -1.67, n.s.). The results suggested that for both high and low value items, when the perceived cost of the item is in a known range, then the item value is the same for giving and receiving.

In contrast, when the perceived cost of the item is not known, as is the case for social interaction items, the values for the other 26 intermediate items are all significantly different. In particular items that reflect social contact have the higher significant mean differences, e.g., *gvalue17: Listen to a friend being angry about a third person* (X = -0.85, t(97)=-5.41, $p < .001$); *gvalue39: Buy a drink for them in a public house/nightclub* (X = -0.71, t(98) = -4.94, $p < .001$); *gvalue3: Purchase items for a friend while shopping for yourself* (X = -0.67, t(96) = -3.69, $p < .001$).

Reported Frequencies between giving and receiving

Evidence for differences in giving and receiving can also found in examining the frequency scale of items exchanged. It was hypothesised that the mean give frequencies would be higher than the mean receive frequencies. Table 5.3 gives t-tests for paired samples of the frequency of the item on the reciprocity scale. A

negative value indicates that the mean give frequency is lower than the mean receive frequency. A mean of zero indicates that there is no difference between the mean give and mean receive frequencies. In contrast to table 5.2 the values in table 5.3 are positive in direction indicating that participants reported that they gave more frequently than they received. Thus, support for the hypothesis was confirmed.

There are fewer significant differences between the scale items on the frequency scale than were present on the give-value and receive-value scale. The frequency pattern is almost a reversed image of the value pattern. 26 of the paired t-tests were significant on the gvalue-rva scale (table 5.2) compared to 27 non-significant paired t-tests on the goften-rfq scale (table 5.3).

Inspection of the items selected previously as examples *Gvalue23:Make a loan of £500 over a year without interest* (mean difference is 0.02 ; std.dev.=0.88) indicates that in the present population not only was there a low overall frequency of giving (mean= 1.38; std.dev.=0.75) and receiving (mean= 1.35; std.dev.=0.79) the item, but also there was effectively no difference between the frequency of giving and receiving. Similarly *Gvalue25:Give them a book you no longer want* also had a negligible mean difference (mean difference is 0.12; std.dev.= 0.79). The differences in frequency of giving and receiving were less for the majority of the items irrespective of overall frequency of giving and receiving. For example, *Goften39:Buy a drink for them in a public house/nightclub* had the highest mean frequency for both giving (mean=3.11; std.dev.=0.92) and receiving (mean=3.24; std.dev.=0.81) with a non significant mean difference (X=-0.13; t(98) = -1.47, n.s.). The mean differences between the give and receive scale items on the frequency scale are less than those for the value scale.

These differences are important for the development of the overall dimensional structure of the reciprocity scale. Items that have predetermined values add little additional information to the scale.

For example, it would be expected that making a loan of £500 (or the equivalent in any currency) without interest would be rated as having a high value and be associated with a low frequency of giving especially in the present student population. Low frequency items are potentially redundant in terms of scale measurement. A decision was taken to reduce the number of scale items by removing items with less than a one year frequency of occurrence. Tables 5.4 and 5.5 show the mean frequency values of the items. Items having a mean frequency value of less than once per year were removed from the scale.

Table 5.2 T-tests for Paired Samples of the value scale

Item	Mean	SD	t-value	df	sig*
GVALUE1-RVA1	-.16	1.47	-1.04	95	.30
GVALUE2-RVA2	-.40	1.48	-2.67	96	.01
GVALUE3-RVA3	-.67	1.80	-3.69	96	.00
GVALUE4-RVA4	-.62	1.60	-3.81	96	.00
GVALUE5-RVA5	-.62	1.40	-4.39	97	.00
GVALUE6-RVA6	-.29	1.76	-1.68	94	.01
GVALUE7-RVA7	-.21	1.75	1.19	92	.24
GVALUE8-RVA8	-.51	1.67	-2.97	95	.00
GVALUE9-RVA9	.03	1.53	.20	92	.83
GVALUE10-RVA10	.17	1.69	1.01	97	.31
GVALUE11-RVA11	-.31	1.65	-1.87	94	.06
GVALUE12-RVA12	-.38	1.71	-2.18	97	.03
GVALUE13-RVA13	-.38	1.79	-2.09	97	.04
GVALUE14-RVA14	-.11	1.32	-.79	91	.43
GVALUE15-RVA15	-.43	1.21	-3.46	94	.00
GVALUE16-RVA16	-.49	1.60	-3.01	95	.00
GVALUE17-RVA17	-.85	1.55	-5.41	97	.00
GVALUE18-RVA18	.03	1.55	.20	91	.84
GVALUE19-RVA19	.00	1.62	.00	93	1.0
GVALUE20-RVA20	-.28	1.45	-1.95	97	.05
GVALUE21-RVA21	-.37	1.45	-2.52	96	.01
GVALUE22-RVA22	-.29	1.28	-2.17	93	.03
GVALUE23-RVA23	-.03	1.61	-.19	92	.85
GVALUE24-RVA24	-.30	1.52	-1.91	91	.06
GVALUE25-RVA25	-.27	1.59	-1.67	95	.10
GVALUE26-RVA26	-.35	1.33	-2.57	93	.01
GVALUE27-RVA27	-.29	1.55	-1.83	96	.07
GVALUE28-RVA28	-.61	1.55	-3.86	95	.00
GVALUE29-RVA29	-.34	1.39	-2.37	93	.02
GVALUE30-RVA30	-.33	1.54	-2.12	95	.04
GVALUE31-RVA31	-.36	1.53	-2.34	95	.02
GVALUE32-RVA32	-.29	1.16	-2.48	94	.01
GVALUE33-RVA33	-.25	1.78	-1.38	94	.17
GVALUE34-RVA34	-.39	1.58	-2.48	98	.01
GVALUE35-RVA35	-.63	1.38	-4.40	93	.00
GVALUE36-RVA36	-.48	1.65	-2.81	93	.01
GVALUE37-RVA37	-.39	1.68	-2.26	94	.03
GVALUE38-RVA38	-.43	1.45	-2.90	94	.00
GVALUE39-RVA39	-.71	1.44	-4.94	98	.00

* two-tailed significance values

Table 5.3 T-tests for Paired Samples of the frequency scale

Item	Mean	SD	t-value	df	sig.*
GOFTEN1-RFQ1	.24	1.07	2.25	98	.03
GOFTEN2-RFQ2	.02	0.74	0.27	98	.79
GOFTEN3-RFQ3	.17	0.95	1.80	97	.07
GOFTEN4-RFQ4	.13	0.90	1.47	97	.14
GOFTEN5-RFQ5	.35	0.84	4.10	97	.00
GOFTEN6-RFQ6	.03	0.93	0.32	98	.75
GOFTEN7-RFQ7	.00	0.87	0.00	98	1.0
GOFTEN8-RFQ8	.14	1.02	1.38	98	.17
GOFTEN9-RFQ9	-.03	0.85	-0.36	96	.72
GOFTEN10-RFQ10	.28	1.19	2.37	98	.02
GOFTEN11-RFQ11	.28	0.91	3.11	97	.00
GOFTEN12-RFQ12	.09	0.78	1.15	98	.25
GOFTEN13-RFQ13	.45	1.07	4.13	97	.00
GOFTEN14-RFQ14	.25	1.09	2.32	97	.02
GOFTEN15-RFQ15	.16	0.89	1.83	98	.07
GOFTEN16-RFQ16	.11	0.99	1.11	98	.27
GOFTEN17-RFQ17	.16	0.92	1.74	98	.08
GOFTEN18-RFQ18	.10	0.81	1.23	97	.22
GOFTEN19-RFQ19	-.06	0.81	-0.75	97	.45
GOFTEN20-RFQ20	.16	0.88	1.83	97	.07
GOFTEN21-RFQ21	.30	0.91	3.26	95	.00
GOFTEN22-RFQ22	-.05	0.81	-0.62	98	.53
GOFTEN23-RFQ23	.02	0.88	0.23	97	.82
GOFTEN24-RFQ24	.05	0.75	0.67	97	.50
GOFTEN25-RFQ25	.12	0.79	1.53	97	.13
GOFTEN26-RFQ26	.19	0.84	2.27	97	.02
GOFTEN27-RFQ27	.00	0.86	0.00	98	1.0
GOFTEN28-RFQ28	.21	0.97	2.20	97	.03
GOFTEN29-RFQ29	-.26	0.88	-2.98	98	.00
GOFTEN30-RFQ30	.03	0.90	0.34	98	.74
GOFTEN31-RFQ31	.25	0.87	2.88	98	.00
GOFTEN32-RFQ32	-.01	0.98	-0.10	98	.92
GOFTEN33-RFQ33	-.08	0.85	-0.96	97	.34
GOFTEN34-RFQ34	.08	1.05	0.77	98	.44
GOFTEN35-RFQ35	-.32	0.81	-3.99	98	.00
GOFTEN36-RFQ36	.15	0.87	1.75	97	.08
GOFTEN37-RFQ37	.06	0.84	0.72	98	.48
GOFTEN38-RFQ38	.08	0.83	0.97	97	.33
GOFTEN39-RFQ39	-.13	0.88	-1.47	98	.14

* two-tailed significance values

Table 5.4 The means and standard deviations of the receive frequency values

item	mean	std.dev.
Borrow £500 over a year without interest	1.35	.79
Help in your garden by mixing concrete/laying a lawn	1.43	.77
Have someone paint and hang wallpaper in a large living area	1.49	.80
Borrow their car to attend an important interview	1.53	.83
Have your hair washed and styled for a special occasion	1.55	.84
Have a friend house sit while you are on holiday over a week	1.58	.91
Be shown by a friend how to use a cafetiere	1.59	.90
Look after your children/aged relative for an evening	1.62	.94
Stay with you in a hospital accident department for hours	1.62	.82
Look after your house key for tradesman access during the day	1.65	.85
Be driven for an hour to an airport for a 6am flight	1.67	.73
Have someone make all the arrangements for a joint holiday	1.68	.86
Have furniture moved into your new home during a weeken	1.71	.81
Give an opinion to assist in your choice of home decor	1.72	.90
Have a party organised and paid for you as a celebration	1.72	.87
Help in your garden by mixing concrete/laying a lawn	1.85	.77
Have them write you a reference for a job	1.87	.82
Respond to an emergency request that inconveniences them a lot	1.92	.84
Be taught how to play a new card game	1.98	.76
Help you move a large item (eg fridge/bed) to another place	2.00	.76
Rearrange an appointment with a dentist/doctor on your behalf	2.01	.89
Borrow an item of clothing for a special event	2.02	.89
Borrow equipment for a job or leisure pastime (eg drill/tent)	2.04	.75
Go shopping for a specific gift for you	2.08	.59
Give advice over a lunch break about a relationship problem	2.29	.95
Borrow a book that they have suggested you read	2.31	.84
Offer advice about clothing when out shopping for a day	2.45	.92
Telephone you during the evening when your are unwell/upset	2.48	.76
Be given a hug when you return from a holiday	2.49	.97
Purchase food items for you as part of their own shopping	2.51	.90
Supply small amounts of groceries when you run out (tea/coffee)	2.55	.81
Be listened too when talking about an intimate relationship	2.56	1.03
Wash up after a meal that you had prepared	2.67	.91
Play a competitive game together	2.69	.84
Be listened to by a friend when you are angry about someone	2.73	.87
Have them listen to you talking about a third person (gossip)	2.90	1.08
Borrow a commonplace thing (eg a calculator)	2.96	.81
Borrow a CD/Tape over a weekend	3.10	.80
Be bought a drink in a public house/nightclub	3.24	.81

N=97-99

Table 5.5 The means and standard deviations of the give frequency values

item	mean	std.dev.
Make a loan of £500 over a year without interest	1.38	.75
Paint and hang wallpaper in a large living area	1.49	.79
Write a reference for a job	1.55	.79
Wash and style their hair for a special occasion	1.60	.92
Hold their house key for tradesmen access during the day	1.61	.81
Drive for an hour to an airport for a 6a.m. flight	1.62	.68
Help in their garden by mixing concrete/laying a lawn	1.62	.85
Loan your car to them to attend an important interview	1.63	.84
Organise and pay for a celebratory party for them	1.64	.85
Make all the arrangements for a joint holiday	1.65	.76
Show a friend how to use a cafetiere	1.65	.90
House sit while a friend is on holiday for over a week	1.73	.89
Give an opinion to assist in their choice of home decor	1.75	.84
Rearrange an appointment (e.g. doctor/dentist) for them	1.75	.87
Move furniture into their home during a weekend	1.79	.80
Look after their children/aged relative for an evening	1.87	.86
Stay with them in a hospital accident dept for hours	1.90	.84
Give them a book you no longer want	1.97	.70
Teach them how to play a new card game	2.01	.93
Loan equipment for a job/leisure pastime (e.g. drill/tent)	2.03	.81
Respond to an inconvenient emergency request	2.08	.87
Help move a large item (e.g. fridge/bed) elsewhere	2.25	.84
Loan an item of clothing for a special event	2.26	.92
Loan a book you have suggested they read	2.40	.74
Go shopping for a specific gift	2.43	.72
Give them a hug when they return from holiday	2.52	.92
Offer advice on clothing when out shopping	2.57	.98
Give advice over a lunch break on a relationship problems	2.59	.91
Telephone during the evening when they are unwell/upset	2.61	.82
Purchase items for a friend while shopping for yourself	2.68	.82
Supply small amounts of groceries when they run out	2.77	.92
Wash up after a meal that they had prepared	2.81	.90
Play a competitive game together	2.85	.96
Listen to a friend being angry about a third person	2.89	.87
Listen to them talking about an intimate relationship	3.01	.90
Loan a commonplace article (e.g. a calculator)	3.04	.94
Loan a CD/tape over a weekend	3.10	.80
Buy a drink for them in a public house/nightclub	3.11	.95
Listen to them talking about a third person (gossip)	3.18	.92

N=98-99

The use of the cut off point led to a reduction in the reciprocity scale to a total of 16 items for the each of the two scales. The effect of the cut off point was to reduce the instrumentality factor to two items. Given that two items cannot safely be used to identify a factor, the items were removed from further analysis. The sociality factor had four items removed leaving ten items. The guidance factor also had four items removed leaving six items.

Factor analysis results of the scale items

In chapter 4 the give value items provided the most interpretable factor structure and a similar picture emerged in the current study. The number of participants required for the factor analysis using the guideline suggested by Baggaley (1982) was 98 (assuming an average correlation between the items of 0.2). Initially all the 32 items were factor analysed specifying a two factor extraction and an oblique rotation (delta = 0). The choice of an oblique rotation was made both to act conservatively, given that there would be a high probability of significant correlations between the items. The structure matrix is given at table 5.5. Inspection of the scree chart at figure 5.1 indicated that potentially four factors could be extracted. A four factor solution was analysed. However, none of the give value items loaded on the receive value factor (loadings > .30). Further, only three items loaded on the give value factor, two of which had negative loadings. The third item, a receive value item, loaded on both give and receive factors though with a higher loading on the receive factor. Accordingly a two factor solution was deemed to be more parsimonious. (A series of factor analyses were also undertaken using an oblique rotation but without specifying the number of factors to be extracted. The oblique rotation failed to converge even with delta = - 300)

In the two factor solution, the first factor had an eigenvalue of 7.83, accounted for 24.5% of the common variance and had significant item loadings on the give-value factor. The second factor had an eigenvalue of 3.39, accounted for 10.6% of the common variance and had significant item loading on the receive factor. The two factors accounted for 35.1% of the total common variance

Table 5.6 shows that there is a discernable structure between the give and receive items. The factor loadings are typically higher for the give value scale compared with the receive value scale. One item, *Play a competitive game together*, is an identical item on both the give and the receive scales. The item loaded on both the give and receive value factor although it loaded higher on the give value factor. The

wording of the item was potentially ambiguous and therefore was removed from further analysis. The give value items were then factor analysed specifying two factors and an oblique rotation with delta = 0.

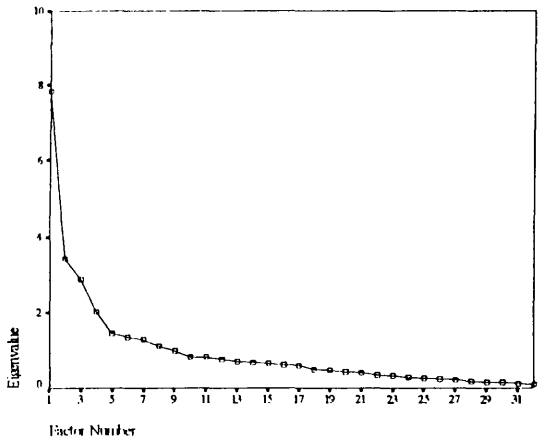

Figure 5.1 Scree chart for all give-receive items

The results are presented in table 5.7. The first factor had an eigenvalue of 5.77, accounted for 36.1% of the common variance and had loadings of the sociality factor. The second factor had an eigenvalue of 1.85, accounted for 11.5%, and had loadings of the guidance factor. The total common variance accounted for by the two factors was 47.6%. The receive value items were also factor analysed. The results are presented in table 5.7. The first factor had an eigenvalue of 4.48, accounted for 29.9% of the common variance and had loadings the sociality factor. The second factor had an eigenvalue of 12.3, accounted for 12.3% of the common variance and had more loadings on the sociality factor than the specified guidance factor (Analysis of the residual correlation matrices also supported a two factor solution with no loadings approaching 0.3). Close inspection of table 5.8 with the presence of high loadings suggested that there was one underlying factor. However, in order to explore possibility that there were two factors further factor analyses were conducted specifying maximum likelihood as the method of condensation and a varimax rotation.

The resulting loadings are presented in tables 5.9 and 5.10. The test of fit of the two factor model was significant both for the give value items ($\chi^2 = 117.53$, df=76, $p < .001$) and for the receive value items ($\chi^2 = 111.08$,df=76, $p < .005$).

Table 5.6 Structure Matrix loadings of the Give value-receive value factor analysis

Give value items	Give	Receive
Buy a drink in a public house/nightclub	.58	
Listen to a friend being angry about a third person	.56	
Loan a CD/tape over a weekend	.70	
Loan a commonplace article (e.g., a calculator)	.64	
Listen to them talking about an intimate relationship	.64	.37
Play a competitive game together	.67	
Give them a hug when they return from holiday	.48	.48
Listen to them talking about a third person (gossip)	.69	
Lend a book that you have suggested they read	.59	
Supply small amounts of groceries when they run out	.75	
Go shopping for a specific gift	.30	.40
Purchase items for a friend while shopping for yourself	.56	.35
Offer advice on clothing when out shopping	.50	.43
Wash up after a meal that they had prepared	.54	
Give advice over a lunch break on a relationship problem	.46	.51
Telephone during the evening when they are unwell/upset	.34	.59
Receive value items		
Be bought a drink by them in a public house/nightclub		.48
Be listened to when you are angry with a third person		.61
Borrow a CD/tape over a weekend	.55	
Borrow a commonplace article (e.g., a calculator)	.44	.32
Be listened to when talking about an intimate relationship		.74
Play a competitive game together	.47	.37
Be given a hug when you return from holiday		.54
Be listened to when talking about a third person (gossip)	.32	.41
Borrow a book that they have suggested you read		
Supply small amounts of groceries when you run out	.30	.45
Go shopping for a specific gift for you		.51
Purchase items for you as part of their own shopping		.58
Be offered advice on clothing when out shopping	.34	.32
Wash up after a meal that you had prepared		.44
Be given advice over a lunch break on a relationship problem		.73
Telephone you during the evening when you are unwell/upset		.64

items loading < .30 are not shown

Table 5.7 Loadings of the give value items on the Sociality and Guidance factors

item	Sociality	Guidance
1.Buy a drink in a public house/nightclub	.57	.42
2.Listen to a friend being angry about a third person	.58	.48
3.Loan a CD/tape over a weekend	.70	
4.Loan a commonplace article (e.g., a calculator)	.73	
5.Listen to them talking about an intimate relationship	.60	.68
6.Give them a hug when they return from holiday	.30	.74
7.Listen to them talking about a third person (gossip)	.71	.33
8.Lend a book that you have suggested they read	.62	
9.Supply small amounts of groceries when they run out	.75	.33
10.Go shopping for a specific gift		.62
11.Purchase items for a friend while shopping for yourself	.50	.54
12.Offer advice on clothing when out shopping	.46	.49
13.Wash up after a meal that they had prepared	.55	
14.Give advice over a lunch break on a relationship problem	.40	.75
15.Telephone during the evening when they are unwell/upset		.85

factor loading < .30 are not shown

Table 5.8 Loadings of the receive value items on the Sociality and Guidance factors

item	Sociality	Guidance
1b.Be bought a drink by them in a public house/nightclub	.51	
2b.Be listened to when you are angry about a third person	.64	
3b.Borrow a CD/tape over a weekend	.46	.68
4b.Borrow a commonplace article (e.g., a calculator)	.56	.48
5b.Be listened to when talking about an intimate relationship	.68	-.40
6b.Be given a hug when you return from holiday	.47	
7b.Be listened to when talking about a third person (gossip)	.57	
8b.Borrow a book that they have suggested you read	.44	
9b.Supply small amounts of groceries when you run out	.60	
10b.Go shopping for a specific gift for you	.51	
11b.Purchase items for you as part of their own shopping	.52	
12b.Be offered advice on clothing when out shopping	.51	.40
13b.Wash up after a meal that you had prepared	.58	
14b.Be given advice over a lunch break on a relationship problem	.60	-.49
15b.Telephone you during the evening when you are unwell/upset	.47	-.57

factor loading < .30 are not shown

Table 5.9 Loadings of the give value items on the Sociality and Guidance factors-maximum likelihood

item	Sociality	Guidance
1.Buy a drink in a public house/nightclub	.46	.31
2.Listen to a friend being angry about a third person	.48	.38
3.Loan a CD/tape over a weekend	.64	
4.Loan a commonplace article (e.g., a calculator)	.70	
5.Listen to them talking about an intimate relationship	.47	.58
6.Give them a hug when they return from holiday		.64
7.Listen to them talking about a third person (gossip)	.61	
8.Lend a book that you have suggested they read	.50	
9.Supply small amounts of groceries when they run out	.69	
10.Go shopping for a specific gift		.49
11.Purchase items for a friend while shopping for yourself	.40	.42
12.Offer advice on clothing when out shopping	.37	.36
13.Wash up after a meal that they had prepared	.46	
14.Give advice over a lunch break on a relationship problem		.66
15.Telephone during the evening when they are unwell/upset		.86

factor loading < .30 are not shown

Table 5.10 Loadings of the receive value items on the Sociality and Guidance factors-maximum likelihood

item	Sociality	Guidance
1b.Be bought a drink by them in a public house/nightclub	.30	.35
2b.Be listened to when you are angry about a third person	.52	.33
3b.Borrow a CD/tape over a weekend		.80
4b.Borrow a commonplace article (e.g., a calculator)		.65
5b.Be listened to when talking about an intimate relationship	.73	
6b.Be given a hug when you return from holiday	.42	
7b.Be listened to when talking about a third person (gossip)	.34	.40
8b.Borrow a book that they have suggested you read		
9b.Supply small amounts of groceries when you run out		.58
10b.Go shopping for a specific gift for you	.30	.33
11b.Purchase items for you as part of their own shopping	.48	
12b.Be offered advice on clothing when out shopping		.49
13b.Wash up after a meal that you had prepared	.32	.37
14b.Be given advice over a lunch break on a relationship problem	.71	
15b.Telephone you during the evening when you are unwell/upset	.62	

factor loading < .30 are not shown

Inspection of table 5.9 indicates overlap on the two factors of 5 items, namely:

1.Buy a drink in a public house/nightclub

2.Listen to a friend being angry about a third person

5.Listen to them talking about an intimate relationship

11.Purchase items for a friend while shopping for yourself

12.Offer advice on clothing when out shopping.

The items can be seen to include elements of both sociality and guidance. For example, item 12 has the guidance element, offer advice, and the social element, when out shopping, so it is not surprising that the whole item loads on both factors. Similarly, item 2 has the social element, of listening, and the guidance element of hearing their anger being expressed. The alternative explanation, simply that these items are ambiguously worded, is less sustainable given the loading on item 7, (0.61) and item 14 (0.66) that have similar phraseology but do load predominantly on one of the two factors.

Inspection of table 5.10 indicates overlap on the two factors of 5 items, namely:

1b.Be bought a drink by them in a public house/nightclub

2b.Be listened to when you are angry about a third person

7b.Be listened to when talking about a third person (gossip)

10b.Go shopping for a specific gift for you

13b.Wash up after a meal that you had prepared

These items can also be seen to include elements of both sociality and guidance. For example, 10b has the social element of purchasing a particular gift, and the guidance element in terms of the specific gift. Item 10b has a noteworthy pattern of loadings. In table 5.6 it loads on guidance as a give-value item and in table 5.7 on sociality as a receive-value item. On table 5.9 item 10b loads on the guidance factor as a give-value item and in table 5.10 it loads on both factors. It may be that the item is perceived to vary as a function of giving or receiving the item. There are other items that, while not loading on both factors, nonetheless load differently on each factor as a function of giving and receiving. For example, item 6, *Be given a*

hug when you return from holiday, loads on the guidance factor as a give-value, and on the sociality factor as a receive-value. A similar pattern emerges for item 15b. Further data are required to substantiate the current loading patterns. However, the exploratory nature of the present study warrants the maintenance of separate scales for giving and receiving.

The two factor model, using a maximum likelihood condensation, is significant for the receive-value items in table 5.10. A one factor model is supported for items in table 5.7, using a principal components condensation. Further replication is needed before any substantive conclusions can be made.

New factors for sociality and guidance were created using the items in tables 5.9 and 5.10. Thus, using the give-value items, a factor called sociality(g) was created by summing items 1-9; and a guidance(g) factor by summing items 10-15. In a similar manner using the receive-value items two other factors, sociality(r) and guidance(r), were created. Correlations between these newly created factors and the original structures reported in chapter 4 were then calculated and reported in table 5.11. Sociality(g) was significantly correlated to the original factor structure ($r = .94$, $n = 99$, $p < .001$) as was Sociality(r) ($r = .92$, $n = 99$, $p < .001$). Guidance(g) was also significantly correlated to the original factor structure ($r = .93$, $n = 99$, $p < .001$) as was Guidance(r) ($r = .91$, $n = 99$, $p < .001$). These large correlations indicate that the new factors are measuring the same variance as the original factor structures. Additionally the intercorrelational patterns between the old and new factors are comparable. Cronbach's alphas were also calculated for the factors and are reported in table 5.11.

The newly created factors have lower Cronbach alphas. In particular guidance(r) has a value that falls below the level of 0.7 typically used as an index of acceptable scale reliability. However, given that the scale only has six items then the alpha value can be taken to reflect a weak but useable factor.

Using the equation proposed by Catell (1978) factor congruences coefficients were calculated for each of the four factors identified at table 5.7 and the same factors identified in chapter 4. The values are presented in table 5.12 and suggests that the factor structures are comparable between the two reported studies except for the guidance(r) factor.

Table 5.11 Correlations between factors

factors	α values	1	2	3	4	5	6	7
1.sociality(g)	.85							
2.guidance(g)	.79	.68						
3.sociality(r)	.81	.52	.46					
4.guidance(r)	.74	.24	.44	.69				
5.xsociality(g)	.83	.94	.70	.48	.21			
6.xguidance(g)	.71	.63	.93	.40	.34	.67		
7.xsociality(r)	.74	.45	.46	.92	.64	.47	.45	
8.xguidance(r)	.65	.18	.40	.69	.91	.18	.38	.68

N=99 r>.19 p<.05 r>.25 p<.01 two-tailed

Table 5.12 Congruence coefficients between factors produced in chapter 4 and the current factors

factor	r_c	probability
give-sociality	+.98	p<.001
give-guidance	+.93	p<.001
receive-sociality	+.93	p<.001
receive-guidance	-.35	n.s.

In summary, the results presented so far suggest that there are two factors underlying the give scale but not necessarily for the receive scale. For the guidance(r) factor the low loadings, seen in table 5.8, the low alpha value, seen in table 5.11, and the lack of congruence with the previous factor structure, seen in table 5.12 may be taken as evidence for suggesting that, if it is defined it is nonetheless a heterogenous factor. Inspection of table 5.8 would suggest, on the basis of the factor loadings, that there is one factor. Two correlations support the maintenance of the factor, the large correlation seen in table 5.11 with the proposed factor structure (r=.91, n=99, p<.001) and also the small intercorrelations with sociality(g) and sociality(r) (r=.18, n=99, n.s.) suggesting that they do not share the same common variance. The four factor structure was

maintained for the next section of the analysis.

T-tests for paired samples comparing the mean differences between sociality(g)/sociality(r), guidance(g) /guidance(r) are given in table 5.13

Table 5.13 T-tests for paired samples

sociality(g) sociality (r)	X = -.41, t(99) = -4.45, p < .001
guidance(g) guidance (r)	X = -.52, t(99) = -5.29, p < .001

In order to further explore the correlational relationships between the reciprocity factors a proxy variable was created, recprox, by subtracting the receive big favours from the give big favours as suggested in table 5.14. Resultant values of recprox = 0 represented balanced reciprocity and values other than zero represented unbalanced reciprocity. Using recprox the participants were divided into two groups. Forty-nine people entered the balanced reciprocity group and forty-seven entered the unbalanced reciprocity group.

Table 5.14 Correlations between the reciprocity factors by recprox (1,2)

Recprox = 1 Balanced Reciprocity				Recprox = 2 Unbalanced Reciprocity			
1.Sociality(g)				1.Sociality(g)			
2.Sociality(r)	.30			2.Sociality(r)	.69		
3.Guidance(g)	.78	.21		3.Guidance(g)	.64	.63	
4.Guidance(r)	.15	.70	.10	4.Guidance(r)	.39	.61	.56
N = 49 r > .27 p < .05	r > .35 p < .01			N = 47 r > .28 p < .05	r > .37 p < .01		

In the introduction to the chapter consideration was given to the possibility that there are two psychological dimensions in giving and receiving. For people who engage in balanced reciprocity the correlation between these processes is likely to be *lower* than that of people who engage in unbalanced reciprocity. The "decoupling" between giving and receiving would allow the for the cognitive bias in overvaluing the receipt of resources for those people who use balanced

reciprocity. Some evidence for this proposition is given in table 5.18 in which the intercorrelations are reported between the reciprocity factors when the groups are formed on the basis of the proxy variable recprox.

Three alternative explanations that can be account for the reported difference in intercorrelations. The first is that the result is a chance occurrence. Only if the results can be replicated can a reply be made to this objection.

The second explanation is that the result is merely the aggregation of individuals who share a third variable in common and that the result is a reflection of an inflated correlation. Two observations counter this argument. Firstly, there is a similar pattern of correlations between the other reciprocity factors in both cases. Secondly, the magnitude of the correlational change is specific to the sociality and guidance factors and not to the correlation between them. However, the observed effect requires further data before any substantive statements can be made.

A third explanation is that the dimensions are represented by differently worded items and therefore the correlation is spurious because it reflects only a change in item labeling. The latter criticism is less sustainable given that the change in correlation is the same for each separate factor in the reciprocity measure and is represented even with a guidance(r) factor with a low Cronbach's alpha.

The evidence presented supports a dimensional structure of the reciprocity measure.

Relationship of the reciprocity factors to family, friends and social network size.

The mean number of people reported was 13.07 (std.dev. = 5.08). This figure is in the typical range reported in the social network literature listed in table 5.14. Social

network composition was a mean of 2.95 (std.dev= 1.89) for family and a mean of 10.22 (std.dev=4.83) for friends. The percentage friendship composition, created by dividing the number of friends reported by the total number of people reported (that is, network size) and multiplying by 100 was 76%. The participants can be regarded as representative of the general population with reference to network size and composition.

Table 5.15 Mean number of people reported in population surveys

Study	Total sample number	Mean	Range
Donald & Ware (1982)	4603	12.1	0-99
Fischer (1982)	1050	18.5	2-67
Wellman (1988)	845	12.5	3-27
Campbell & Lee (1991)	690	14.7	
Current study	99	13.1	

The network measure used divided the network list into family members and friends. Further the measure asked participants to indicate for each network relationship whether they gave large or small favours to them or received large or small favours from them. Consistent with the findings of the factor analysis participants reported that they gave marginally more favours to members of their network than they received although there was no difference between family network members. Table 5.16 gives the mean values of favours given and received by network relationship.

Table 5.16 Mean values of give and receive favours by network relationship

	Mean	Std.dev.	valid n
Give large favours to family	2.3	1.8	97
Receive large favours from family	2.5	1.8	96
Give small favours to family	2.5	2.0	96
Receive small favours from family	2.2		96
Give large favours to friends	5.6	3.9	96
Receive large favours from friends	4.8	3.6	96
Give small favours to friends	8.0	4.6	96
Receive small favours from friends	8.0	4.7	96

In a balanced network relationship the number of give favours would equal the number of received favours. Because there was a reported balance between family members in terms of giving and receiving both large and small favours it was not possible to test the hypothesis as stated.

Total network size had small positive and significant correlations with guidance(g) ($r = .22$, $n = 98$, $p < .05$) and guidance(r) ($r = .21$, $n = 98$, $p < .05$) but not with either sociality(g) or sociality(r). The latter finding is counter to that expected. A pattern of small but significant correlations can be seen between guidance, family and friends.

Family size ($r = .23$, $n = 99$, $p < .05$) correlates with guidance(r) but not with guidance(g). Conversely friend size correlates with guidance(g) ($r = .22$, $n = 98$, $p < .05$) but not with guidance(r). The pattern of the correlations is consistent with the factor description. However, while the correlations are significant they have low power values, though the correlations are in the direction of the relationship of the guidance factor. Table 5.17 reports the correlations between the reported numbers of family and friends with sociality(g), sociality(r), guidance(g), and guidance(r).

Table 5.17 Correlations between Sociality, Guidance and numbers of Family and Friends

Scale	1	2	3	4	5	6
1.Family						
2.Friends	-.14					
3.Sociality(g)	-.12	.16				
4.Sociality(r)	.09	.16	.47			
5.Guidance(g)	.06	.22	.67	.45		
6.Guidance(r)	.23	.14	.18	.68	.38	

N=98-99 r>.19 p<.05 r>.25 p<.01 two-tailed

The network measure distinguished between family and friends in the number and size of the favours given. The categories represent the reported frequency of each favour. Table 5.18 gives the correlations of the relationships between family, table

5.19 gives the correlations between friends and the reciprocity factors.

Table 5.18 Correlations between give and receive favours with family and reciprocity factors

	1	2	3	4	5	6	7	8
1.Give big favours								
2.Give small favours	.60							
3.Receive big favours	.75	.66						
4.Receive small favours	.70	.91	.65					
5.Sociality(g)	.02	.04	.02	.07				
6.Sociality(r)	.09	.19	.06	.20	.47			
7.Guidance(g)	.04	.10	.05	.06	.67	.45		
8.Guidance(r)	.09	.11	.11	.09	.18	.68	.38	

N=98-99 r>.19 p<.05 r>.25 p<.01 two-tailed

Table 5.19 Correlations between give and receive favours with friends and reciprocity factors

	1	2	3	4	5	6	7	8
1.Give big favours								
2.Give small favours	.41							
3.Receive big favours	.75	.47						
4.Receive small favours	.51	.92	.40					
5.Sociality(g)	.30	.14	.32	.09				
6.Sociality(r)	.27	.21	.28	.19	.47			
7.Guidance(g)	.27	.14	.28	.10	.67	.45		
8.Guidance(r)	.17	.05	.12	.07	.18	.68	.38	

N=98-99 r>.19 p<.05 r>.25 p<.01 two-tailed

With respect to the correlations with the reciprocity factors only the receive small favours reached a significant correlation with sociality(r). A different pattern of significant correlations can be seen in table 5.18. Sociality(g) has a medium correlation with give big favours and receive big favours. There are no significant correlations with give and receive small favours. Sociality(r) and Guidance(g) show a similar pattern to that of Sociality(g) but with lower correlations. Sociality(r) also has an additional significant correlation with give small favours. Guidance(r) does not correlate significantly with any of the four favour categories. The correlations between sociality(g) and give and receive big favours reach a power coefficient of 0.85 (α =.05; two-tailed). The pattern of correlations in table 5.17 is consistent with the proposed factor identity relating to social activity with non-

kin.

Three constructed reciprocity measures

Using the method described in chapter 4 three measures of reciprocity were constructed. Table 5.20 summarises the means and standard deviations of the three measures.

Table 5.20 Summary statistics of the constructed reciprocity measures

Variable	Mean	Std Dev	Minimum	Maximum	N
Diffsoc	-.41	.98	-4.67	1.50	99
Diffgui	-.52	.93	-3.56	1.44	99
Ratiosoc	.91	.25	.22	1.65	99
Ratiogui	.89	.22	.20	1.56	99
Multisoc	12.73	5.46	2.89	25.48	99
Multigui	14.82	5.65	3.97	29.28	99

Tables 5.21 and 5.22 show the intercorrelations between the measures for the present study and that of chapter 4. The two studies are not strictly comparable due to the change in both scaling and factor structure by the removal of the instrumentality factor.

However, the comparison is illustrative of the relationships between the methods used to calculate reciprocity. As in chapter 4 for the difference scores Cronbach alpha's are attenuated from: sociality(g) .85 sociality(r) .81 to Diffsoc .64; and guidance(g) .79 guidance(r) .74 to Diffgui .58. Both values are below acceptable levels for scale reliability.

Table 5.21 Correlations between the constructed reciprocity measures in present study

	1	2	3	4	5
1. Diffsoc					
2. Diffgui	.64				
3. Ratiosoc	.96	.55			
4. Ratiogui	.55	.97	.48		
5. Multisoc	.26	.28	.26	.32	
6. Multigui	.06	.21	.02	.25	.72

N=99 $r > .19$ $p < .05$ $r > .25$ $p < .01$ two-tailed

Table 5.22 Correlations between the constructed reciprocity measures in chapter 4

	1	2	3	4	5
1. Diffsoc					
2. Diffgui	.36				
3. Ratiosoc	.96	.37			
4. Ratiogui	.27	.87	.27		
5. Multisoc	.11	-.02	-.02	-.07	
6. Multigui	-.02	-.12	-.03	-.22	.72

N=164 $r > .14$ $p < .05$ $r > .20$ $p < .01$ two-tailed

Broadly there is a distinguishable pattern in tables 5.20 and 5.21 between the correlations such that the calculation of reciprocity results in larger magnitude of correlations between difference and ratio methods compared with the multiplicative method. (For Diffsoc and Ratiosoc the correlation is .96 in both studies; for Diffgui and Ratiogui the correlation are .87 and .97). Additionally the correlation between Multisoc and Multigui is remarkably similar between both studies (.72). The results confirm conclusions made in chapter 4 about methodological issues surrounding the measurement of reciprocity.

DISCUSSION

The results presented provide part confirmation of the first hypothesis. For high and low valued favours there is equivalence with respect to giving and receiving. However, for favours that lie in the middle range the mean receive values are greater than the give values. These favours tend to relate to social interaction rather than goods and services.

Both social exchange and equity theory make a theoretical assumption that all support resources have similar values. A further assumption is that value is not related to the frequency of giving or receiving. However, the value of some favours cannot be easily determined, in particular those that relate to social interaction. Some favours can be valued such as goods and services, with a degree of precision. However, many favours are not so easily quantifiable. The avoidance of social indiscretion and maintenance of social networks requires a strategy for those instances when favour values are indeterminate. In such cases a successful cognitive strategy would be to underestimate the value of giving and overestimate the value of receiving.

It was not possible to determine the relationship between balanced and unbalanced reciprocity and role relations. In the present population all relationships were reported to be balanced.

With reference to social network size the results partly support the third hypothesis. For family relations significant correlations are found with the receive guidance factor of the reciprocity measure but not with give or receive sociality. For friends the give guidance factor has a significant positive correlation but not with give or receive sociality. Irrespective of size of favour more favours were exchanged with friends than family. The mean number of favours given and received was equivalent for both family and friends indicating that balanced reciprocity was the norm for the current population. Given that the majority of the participants had only recently left home it could be assumed that the familial social network still exerted some influence. The highest mean value was for giving and receiving small favours with friends. For the present participants small favours potentially index the way that social networks are established.

Social exchange theory and reciprocity

Social exchange and equity theory assume that one process underlies both giving

and receiving. If there are two psychological processes, one for giving and one for receiving, then the simple ratio equation of inputs over outcomes is simple irrespective of who is perceiving the social exchange. Marked instances would occur when values for giving and receiving significantly depart from each other. In table 5.1 the item with the largest mean difference between giving and receiving was *gvalue17:Listen to a friend being angry about a third person* (X= -.85). The negative sign shows that there is a higher value to being listened to than listening for this item. Thus in the inequity equation if these two values for item 17 were inserted as a ratio then because in the simplest case the ratio would never equal one there would **always** be a perceived inequity. In table 5.1 the item with the least mean difference was *gvalue19:Make all the arrangements for a joint holiday* (X=0). For item 19 in the simplest case the ratio would equal one and then perceived inequity could be balanced as predicted by Homans (1961). Inspection of table 5.2 shows that the mean difference in frequency for both items is not significant so the effect cannot be attributed to a frequency factor. From the item labels it would be difficult to state, *a priori*, the item of most value. Even if the present student population was not a representative sample of the general population, nonetheless the effect of differential values still cannot be accommodated in the inequity model of social exchange. On the prior reasoning the inequity model would predict inequity successfully when the give and receive values were very similar. For items on the present instrumentality factor the inequity model could be said to operate successfully. However, the inequity model would not account for the items on the sociality and guidance factors.

The frequency of favour exchange is also a salient variable in the perception of the social exchange process. The main effect of frequency, however, appears to be not in the determination of the absolute value of the item but in the determination of the relative value of giving or receiving the item. The differential effects can be seen in the following example. *Gvalue18:Loan your car to them to attend an important interview* has a give mean value = 4.47 (std.dev.=1.45), a receive mean value = 4.42 (std.dev.= 1.48) but a non-significant mean difference between the frequency of

giving and receiving. *Gvalue5: Go shopping for a specific gift* has a give mean value = 4.25 (std.dev.= 1.42), a receive mean value = 4.87 (std.dev.= 1.31) but has a significant mean difference between the frequency of giving and receiving. The implication is that you are more likely to exchange item gvalue5 than gvalue18 and more likely to give gvalue5 than receive it. Thus, the general rule that the less frequent the exchange the higher the value is held, in the present population, for giving but not for receiving. A ratio model of social exchange cannot account for these effects. Moreover, if there are further differences not only related to the resource type (e.g., instrumental vs social), give and receive values, but also in the underlying give and receive dimension(s) then social exchange is slightly more complicated. Thus, if the resource type dimensions for giving are not comparable to those for identical for receiving then the different outcomes can be anticipated. In the literature such an effect has not been reported as such because conceptually it has not been considered. However, if the present rationale is correct then it would explain the often reported result that different resource types are interchangeable. Walker (1992) using the social exchange theory proposed by Foa (1975) using a population of older mothers (mean age=81.1) and their daughters (mean age=51.8) asked each dyad to assess the amount of a resource type that they gave and received. Walker (1992) found that there was a difference in the types of resources exchanged but that the dyads reported equity in their relationships. The explanation for the finding was that older people might operate from a norm of generalised (delayed) reciprocity rather than specific (immediate) reciprocity and that exact payments are not expected. Ingersoll-Dayton (1988) in a study of the perception of reciprocal and nonreciprocal support again with a population of older and middle-aged adults found differences in the giving and receiving of emotional and instrumental support that they explained by suggesting different rules governed reciprocity depending on the relationship. The above two explanations could be reduced to one by considering the internal cognitive accounting processes in addition to the reported responses. In the current example frequency is not considered to apply as there is evidence to suggest that older people perceive that they receive more frequently than they give (Dowd, 1975) a

finding contrary to the present population of young students. Though for older people who are clinically symptom free then a similar perception of giving more than receiving is found (Wentowski, 1981).

The argument begins by accepting the assumption that the give values of the resources are lower than the receive values. When a giver gives resource A(g)value then that is perceived by the receiver as A(r)value (fig. 5.2). When the receiver returns resource B(g)value then that is perceived by the original giver as B(r)value.

Using a cognitive internal accounting process both parties would perceive that a balanced reciprocal relationship had been achieved not if A(r)value = B(r)value, a relation that is difficult to gauge except perhaps for monetary exchanges, but when the relationship between A(g)value:B(r)value is equivalent to B(g)value:A(r)value and tends to zero. A(g)value:B(r)value and B(g)value:A(r)value are internal representations and therefore can be gauged by the individuals. The closer the social connection the more these internal relative values would be similar. In the example there would be an inherent predisposition to evaluate an overbenefited reciprocal relationship given that the receive values are perceived as higher than the give values. That mechanism would provide for an increased probability of an imbalance in the social exchange and hence the maintenance of the relationship (c.f.,the motivational variable of Homans, 1961).

By extension the argument could also suggest why communal and exchange orientations have been reported. (Clark et al., 1986) in an experiment to explore the distinction in orientations told a student population that in a different room a woman, who was either interested in meeting people (communal) or married (exchange) conditions, was engaged in a difficult task and could ask for help by putting a note through a slot into a box in the room occupied by the participant. Participants were led to expect that there would be an opportunity to switch roles (opportunity condition) or not (no opportunity condition). A significant difference in the dependent measure, the mean number of box checks, was found

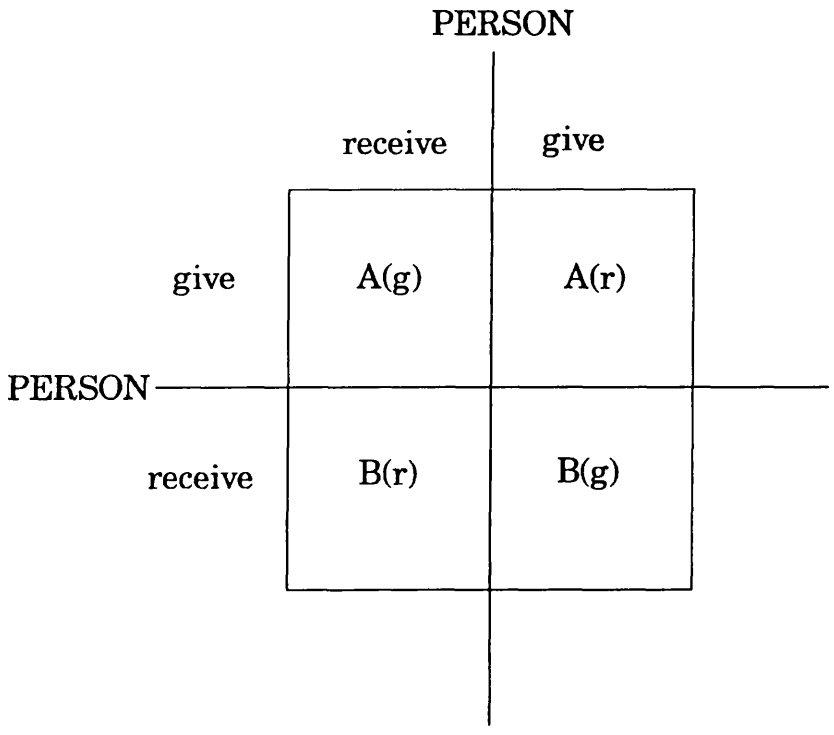

Figure 5.2 Representation of give and receive options

between the communal no-opportunity and the exchange no-opportunity, and the exchange opportunity and exchange no-opportunity conditions. A three way between-subjects analysis of variance (sex x relationship x opportunity to reciprocate) revealed a significant interaction between relationship type and opportunity for reciprocation. Table 5.23 reproduces the data.

Table 5.23 Clark et.al.(1987) : Mean number of box checks by relationship x opportunity

	Opportunity for reciprocation	
Relationship	No Opportunity	Opportunity
Communal		
Mean	2.17	2.06
n	18	16
Exchange		
Mean	1.19	2.13
n	16	16

N = 66 (46 men: 20 women)

Rather than use an explanation based on exchange and communal "norms" the results could also be accounted for using the argument presented above. For the no-opportunity to reciprocate condition then the receive value function by definition is zero. The give values alone would then determine the response. The difference between exchange and communal orientation would be explained by not by a higher give value for communal orientation but a lower value for the give value for exchange orientation. Inspection of table 5.19 provides support for the argument in that the mean number of box checks for exchange no-opportunity is lower than exchange opportunity. It is more likely that the communal orientation values represent the "basal" rate for the give value.

In the both opportunity to reciprocate conditions the mean numbers of box checks are similar and would be predicted by the argument above given that the receive function value would be in the same range for both communal and exchange orientation conditions. The difference could be accounted for by changing the assumption that "receive values are perceived as higher than give values" to "in exchange conditions the receive and give values are similar". In communal conditions receive values remain higher than give values.

Support for the current argument could be seen in situations such as tipping service staff in a restaurant. The receive value function would again be zero (the meal is eaten) hence the money given as a tip would be the internal give value for the service given a factor that does not have an absolute value. Measurement of the propensity to tip could be assessed by a measure of reciprocity. In a self-service restaurant the receive value function would have a value but there would be no "service given".

The actual relationship between A(g):B(r) can be a difference, ratio or multiplicative one. The analysis at present suggests only that there is likely to be greater correspondence between difference and ratio measures than with multiplicative measures. The significance of the results is that the majority of

studies reviewed in chapter 2 used a simple difference score as the method for calculating reciprocity. The present results indicate that such a method may not have been appropriate for many of the studies.

The present chapter has provided preliminary evidence for a internal representation of reciprocity through the confirmation of cognitive biases. The next chapter considers the further development of the reciprocity measure by considering alternatives to value and frequency measurement in order to improve the psychometric properties of the scale. The linkages with other social network variables will be further evaluated.

Chapter 6: The developed reciprocity measure and its relationship to functional and structural measures

INTRODUCTION

In chapter 5 it was argued that the use of equity theory, with its focus on perceived inputs and received outcomes, could not account for the findings observed. A different internal cognitive mechanism was proposed. It was shown that though favours were not equally valued their value was not arbitrary but varied systematically. Favours that were instrumental in action, e.g., the loan of money or movement of possessions, had less value variability than favours reflecting social interaction, e.g., listening to a friend being angry about a third person. Additionally, there was an overall frequency effect, such that people reported that they gave more than they received. The latter effect was not predicted in that, by chance, there should have been equal numbers of balanced and imbalanced favours.

The outcomes of social exchanges that involve resources of a known currency, typically money, have been extensively studied (Olson, 1965). Rational choice assumptions have been used to explain behaviour in the four researched types of social exchange dilemmas: prisoner's dilemmas, assurance games, chicken games and coordination games. Other explanations involving trust have also been proposed (Kollock, 1993). However, experimental paradigms based on resources that have certain and fixed values may not be applicable to social situations where the resources themselves have uncertain and variable values. The 'play safe' strategies are likely to be more evident in the latter conditions. Under these conditions individual decision making strategies are more likely to be influenced by cultural factors, that is factors beyond the individual, in the resolution of social dilemmas. For example, Yan (1996) in describing the guanxi (gift giving) networks of a chinese village community, analysed 43 family gift lists covering 5286 individual gift transactions. Not surprisingly he found that high gift values were related to close kinship relationships. More significantly, however, was the finding

that the value of gift given by fellow villagers was within strict limits:

> "It seems that in 1988, 10 yuan was the average wedding gift, five yuan was considered a small gift, and twenty yuan was a generous one" (Yan, 1996: p.111).

In formal equity theory these social network influences are not acknowledged. The key point is that there is an interaction between the social network and the content of the social exchange. For social exchanges that have uncertain and variable values then the validity of the conventional equity equation is also questionable. The development of equity theory from an accounting based process to one that considers the relationship of provider and recipient requires a modified theory.

Table 6.1 Comparison of judgements by respondents and researchers on giving and receiving support (modified table)

	Researchers' judgments		
Respondents' judgments	Gives more than receives	Equitable	Receives more than gives
Gives more than receives	0	0	6
Equitable	2	10	6
Receives more than gives	0	4	3

N=31

Reporting on a study of older adults (aged 75 and over), Ingersoll-Dayton and Talbot (1992) found that, in contrast to the current thesis, none of the respondents or researchers judged that the older people in the study gave more than they received. The salient finding is reported in table 6.1.

In a study of former psychiatric patients Nelson (1992) found a similar result that the overall frequency of giving support was lower than receiving, though the difference was not statistically significant. Thus, it may be that for certain

populations the directional frequency of giving and receiving are reversed. These findings have implications for the theory and measurement of reciprocity.

Ingersoll-Dayton (1992) theorising on the discrepancy between the respondents' and researchers' reported equivalence of giving and receiving, listed six cognitive mechanisms. These cognitive mechanisms were used by older people, unable to engage in balanced social exchanges, to restore equity by over estimating their inputs.

In addition to three previously identified cognitive mechanisms: *Social support bank mechanism*(Antonucci & Jackson, 1990) where individuals use a life-span timescale when considering the value of the support given or received from a person, support given is considered as a deposit against future need for withdrawal; *Equity Potential* (Roberto & Scott, 1986) involves the favourable comparison of continued personal achievement relative to other people in similar circumstances; *Unit delimitation* (Walster et al., 1978) describes the situation where a person ignores calculating social exchanges within particular relationships, usually those of intimates and thus, the amount of support received is minimised since inputs are only considered from non-intimates who typically provide less support. Ingersoll-Dayton and Talbot (1992) identified three further mechanisms. These were *Selective Focus*, where individuals attend only to the support provided and overlook any support that they **cannot** provide; *Personality Continuity*, operating by emphasising help-giving over the lifetime as contrasted to the support bank; and *Social Comparison*:

> "past, new, and old relationships are contrasted to underemphasize support given in the present. Those who used this mechanism may have developed standards for the balance of exchange earlier, when they were involved in inequitable and draining relationships. Therefore, less draining or more equitable relationships in the present appear to be even more equitable or more giving than they

are, because of the improvement they represent over the past relationships" (p.139).

Support for the assumption that "restoring psychological equity" is the primary goal of cognitive operations (Walster et al., 1978) found in the results presented by Ingersoll-Dayton and Talbot (1992). Respondents did perceived themselves as disproportionately giving or receiving support. Those who perceived themselves as support givers maintained their beliefs in their own abilities, whereas those who perceive themselves primarily support recipients sustained their view of a beneficent world. The latter finding also suggests that self-esteem may be differentially linked to the overall perception of being a giver or receiver of support though the cause and effect relationship is unclear.

Nadler and Mayseless (1983) in a review of the literature regarding help seeking and self-esteem note that high self-esteem recipients are less willing to seek further help and reciprocate more indicating that self-esteem may act as a casual variable. In the present thesis if people with high self-esteem are more reciprocal, then there would be no difference in the measures of reported frequency of giving and receiving. Further, those with lower self-esteem would report receiving more than giving.

There are two significant problems with the mechanisms suggested by Ingersoll-Dayton and Talbot (1992). Firstly, the mechanisms they proposed have a considerable dependency on memory for events. The assumption is that people who remember more positive instances of support provision should make positive statements and vice-versa. There is evidence to indicate that this simple relationship does not in fact operate (Hastie & Park, 1986). Secondly, the cognitive mechanisms are based on an assumption that the assessment of giving and receiving is based on a simple difference calculation. The analysis implies that giving more or less is calculated by a simple subtraction of giving and receiving. Only one of the six models, *selective focus*, could account for the difference in support resources being exchanged as a function of giving and receiving and all the

other models assume resource equivalence. The resources exchanged are perceived as interchangeable. However, even for *selective focus* the underlying process was one of ignoring the saliency of other support resources.

An alternative explanation though still using the concept of a cognitive mechanism would be to suggest that individuals construct an internal representation of their social network. It may also lead to a more parsimonious explanation of the latter study. Not considering intervening cognitive mechanisms may account for the lack of a consistent positive relationship between equity of social exchanges and psychological well-being.

The concept of an internal representation of a social network as an intervening cognitive mechanism can be found in the literature both within social support (Lakey & Drew, 1997) and social cognition. The literature has developed more in the social cognition literature through the cognitive representation of individuals' social world (Pattison, 1994).

In particular Carley (Carley, 1986a; Carley, 1986b) developed a "constructualist" view in which semantic models of human knowledge are related to social networks such that knowledge acquisition is dependent on active social interactions as well as on individuals' current knowledge bases. Though not yet reported in the literature the cognitive representation of a personal social network is likely to be linked the concept of reciprocity given that information about individual reciprocity is communicated in the social context of relationships with other people. The linkage is unlikely to be a linear representation as implied by a one-to-one map of ego with social relations, but potentially one of a dimensional nature. For example, within a cognitive representation of a social network, the notion of giving more than receiving is not based on an actual calculation or exchange, but on a **belief** that this is the case. When confronted by an actual social exchange the belief determines the outcome of the interaction. The range of perceptual biases within social cognition has been extensively summarised by Wyer and Carlston

(1994) and offer evidence for the proposed concept. Additionally as indicated earlier the size of the memory component for a model of social exchange that relied exclusively on the recording of transactions would be difficult to conceptualise. Thus, reciprocity can be considered as a cognitive variable that has a relationship with actual social exchanges. The preceding chapters have confirmed that the values of the resources transacted are not fixed but are variable depending on receipt or provision. The cognitive representation would incorporate the finding by suggesting that parties to social exchange would perceive a balanced reciprocal relationship not if A(r)value = B(r)value, where the values need to be known by both parties, but when the difference between A(g)value-B(r)value is equivalent to B(g)value-A(r)value and tends to zero. Since A(g)value-B(r)value and B(g)value-A(r)value are internal representations they can be gauged by the individual. As previously discussed these internal representations are likely to be influenced by cultural and social factors.

In the current discussion about reciprocity the proposal that people develop a schema (network representation) for people who they feel that they depend on is well documented (Sarason, Sarason, & Pierce, 1990b). Moreover, using the schema concept it has been possible to discriminate between specific relationships and the global sense of availability of support (Sarason, Sarason, & Pierce, 1992), and to hypothesise that these relationships vary dimensionally on, *inter alia*, reciprocity (Sarason, Sarason, & Pierce, 1994: p.308).

The next logical step is to develop the concept such that it represents both the people upon whom the individual is dependent and those who are dependent on the individual. In other words to consider social support from a non egocentric perspective.

Specific Hypotheses

1. It is hypothesised that the two developed reciprocity measures based on the cognitive representation of a social network will both correlate with a measure of perceived social support (ISEL) and also with network size;

2. It is hypothesised that the ISEL will not correlate with network size based on the results of chapter 3;

3. It is hypothesised that people who report high density networks there will be a greater correlation between Icount and Mecount reflecting more reciprocal relations in their social networks;

4. It is hypothesised that self-esteem will be correlated with Icount and Mecount.

METHOD

Participants

Participants were 82 undergraduates attending a higher educational establishment in London. They ranged in age from 18-40 years with the mean being 20.9 years (std.dev.= 4.24years). 59 of the participants were female (72%). Ninety-eight percent of the participants recorded their marital status as single. With respect to birth order 50% were firstborns. The occupational status of the parents was recoded into a class variable using the OPCS(1991) classification. 47% of the participants were coded as class 2 (median= 2). 78% of the participants regarded their first language as English. The median number of people reported was 11(range 4-15). The median density reported was 28.00.
The optimum number of participants for a factor analytic study when there are 30 items and an estimated effect size of 0.3 is 66 (Baggaley, 1982).

Instruments

The revised reciprocity scales were created by keeping the item labels previously developed in chapter 5 but modifying the response scale. The receive scale items are listed at table 6.2. The six item likert type scale labelled value was changed to a six item agree-disagree scale. The rating scale was prefaced by the either the phrase "there are people in my life who I can count on to:" (the receive scale, *Icount*) or

"there are people in my life who can count on me to:" (the give scale, *Mecount*). The rationale for the change was to focus the respondents' attention to people that could depend on the respondent and in like manner those people whom the respondent could also depend on.

Table 6.2 Items for the *Icount* scale

1.Be bought a drink by them in a public house/nightclub
2.Be listened to when you are angry with a third person
3.Borrow a CD/tape over a weekend
4.Borrow a commonplace article (e.g., a calculator)
5.Be listened to when talking about an intimate relationship
6.Be given a hug when you return from holiday
7.Be listened to when talking about a third person (gossip)
8.Borrow a book that they have suggested you read
9.Supply small amounts of groceries when you run out
10.Go shopping for a specific gift for you
11.Purchase items for you as part of their own shopping
12.Be offered advice on clothing when out shopping
13.Wash up after a meal that you had prepared
14.Be given advice over a lunch break on a relationship problem
15.Telephone you during the evening when you are unwell/upset
The items were rated from 1=strongly disagree to 6=strongly agree.

The ISEL (Cohen et al., 1985) was used to identify the components of perceived social support as in previous chapters. Self-esteem was measured using the Rosenberg (1965) Self-Esteem scale and scored according to the original Guttman scale. Network density and size was measured using the procedure reported by (Hirsch, 1979; Hirsch, 1980). The Marlowe-Crowne (1960) scale was used to assess the effects of social desirability.

Procedure

Each participant anonymously completed a pack containing the self-report questionnaires in their first term at university. The order of presentation was randomised. Following completion of the questionnaires group feedback was offered. There were three incomplete and unusable questionnaires which were not included in further analysis. The completion rate was 96 per cent.

RESULTS

Demographic Results

Table 6.3 Demographic correlations

	1	2	3	4	5	6	7
1. Age							
2. Sex	-.07						
3. Marital	.51	.08					
4. Lang	-.10	.05	-.06				
5. Border	.07	.02	.20	-.11			
6. Class	.08	-.10	.15	.03	.00		
7. People	-.16	.00	-.08	-.12	-.07	.04	
N=64-82	r>.19 (p<.05)		r>.27 (p<.01)				

The demographic correlations are given at table 6.3. The high correlation between age and marital status is as expected given the participants were students (r power =.99 at $\alpha = .05$, two tailed). Partial correlations controlling for sex were calculated but did not materially change the existing correlations. The correlational pattern is similar to that obtained in previous populations.

Factor Analysis of the Reciprocity scales

The fifteen items of each scale were subjected to a factor analysis using principal components analysis specifying extraction of factors with eigenvalues over 1 and an oblimin rotation. The present factor analysis was exploratory for the new response scale, therefore it was anticipated that there may be significant intercorrelations between the items hence the oblimin rotation. The scree charts are presented as figure 6.1 and figure 6.2.

The factor analysis of the *Icount on* scale extracted one factor with an eigenvalue value of 11.18 that accounted for 74.5% of the variance. The factor analysis of the *Mecount* scale extracted one factor with an eigenvalue of 10.84 that accounted for 72.3% of the variance. Given the extraction of only one factor it was not possible to obtain a rotation. The item loadings, means and standard deviations for each

factor ranked in order of magnitude of loading are presented in tables 6.4 and 6.5. There is a slight difference in the ordering of items suggesting that the items concerning "listening" load higher on the *Mecount* factor than on the *Icount* factor. Given the high loadings, two scales were constructed from the unweighted sums of all the items loading on each factor and dividing by the number of items (fifteen). Cronbach alpha's were calculated for each scale. Both the *I count* and *Mecount* scales had alphas of .97.

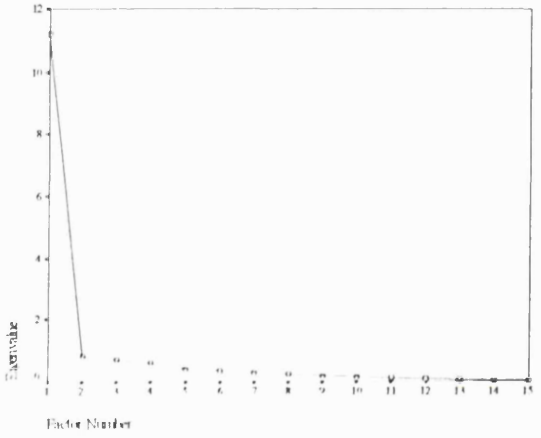

Figure 6.1 Scree chart of Icount

Table 6.4 Item loadings, means and standard deviations of Icount

item	Loading	Mean	SD
12.Be offered advice on clothing when out shopping	.90	5.58	1.13
4.Borrow a commonplace article (e.g., a calculator)	.86	5.48	1.11
3.Borrow a CD/tape over a weekend	.83	5.48	1.02
10.Go shopping for a specific gift for you	.83	5.33	1.10
13.Wash up after a meal that you had prepared	.83	5.20	1.30
14.Be given advice over lunch break on a relationship problem	.82	5.27	1.12
2. Be listened to when you are angry about a third person	.80	5.44	0.94
8. Borrow a book that they have suggested you read	.81	5.45	1.07
15.Telephone you during the evening when they are unwell/upset	.79	5.30	1.09
11.Purchase items for you as part of their own shopping	.71	5.32	1.13
7.Be listened to when talking about a third person (gossip)	.70	5.31	1.14
9.Supply small amounts of groceries when you run out	.69	5.30	1.09
5.Be listened to when talking about an intimate relationship	.66	5.27	1.09
6.Be given a hug when you return from holiday	.51	5.45	1.11
1.Be bought a drink by them in a public house/nightclub	.49	5.28	1.13

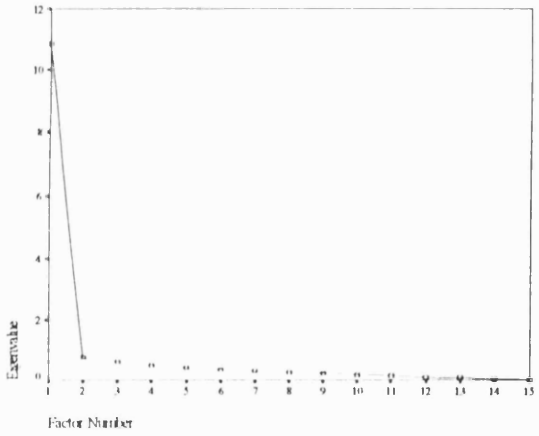

Figure 6.2 Scree chart of Mecount

Table 6.5 Item loadings, means and standard deviations of Mecount

item	Loading	Mean	SD
2b.Listen to them being angry about a third person	.88	5.46	1.00
3b.Loan a CD/tape over a weekend	.87	5.41	1.23
4b.Loan a commonplace article (e.g., a calculator)	.82	5.44	1.23
5b.Listen to them talking about an intimate relationship	.81	5.38	1.10
7b Listen to them talking about a third person (gossip)	.78	5.25	1.09
10b.Go shopping for a specific gift for them	.73	5.27	1.23
13b.Wash up after a meal that they had prepared	.71	5.31	1.08
6b.Give them a hug when they return from holiday	.70	5.46	1.08
9b.Supply small amounts of groceries when they run out	.70	5.40	1.02
15b.Telephone them during the evening when they are unwell/upset	.68	5.53	0.94
11b.Purchase items for them as part of your own shopping	.68	5.44	1.00
14b.Give advice over a lunch break on a relationship problem	.67	5.34	0.96
8b.Loan a book that you have suggested they read	.63	5.39	1.18
12b.Offer advice on clothing when out shopping	.61	5.29	1.15
1b.Buy a drink for them in a public house/nightclub	.56	5.25	1.06

The mean values for the two scales were for the *I count* was 5.34 (std.dev. = .95); and for the *Mecount* was 5.32 (std.dev. = .99). Inspection of table 6.6 shows that there were no correlations with the two scales and the Marlowe-Crowne (Crowne & Marlowe, 1960) scale indicating that social desirability does not account for the observed means. There is no significant difference in the means of the two scales (mean difference = .01; t = .22; df = 62; p = .83).

The first hypothesis was that the two factors would correlate with the ISEL and with network size whereas the ISEL would not correlate with network size. The ISEL subscales were constructed on the basis of the original author scale dimensions but following the earlier examination of the ISEL the self-esteem scale was not included in the analyses. The Cronbach alpha values for the subscales each containing ten items were appraisal, .74; belonging, .78; and tangible, .73. These are low but acceptable alpha values. The ISEL total scale Cronbach alpha was .92 (40 items).

Correlations between the *Icount* and *Mecount* scales were calculated for the ISEL, its subscales and network size. These correlations are presented in table 6.6.

Table 6.6 Correlations of Icount, Mecount with ISEL, Marlowe-Crowne and network size

Scale	αvalue	1	2	3	4	5	6	7
1. Icount	.97							
2. Mecount	.97	.87						
3. Iselapp	.74	.39	.34					
4. Iselbel	.78	.48	.41	.78				
5. Iseltang	.73	.40	.34	.70	.81			
6. Iseltot	.92	.45	.39	.87	.94	.91		
7. Crowne	.78	-.06	-.01	.12	.12	.00	.10	
8. Network size		.34	.34	.04	.15	.03	.11	.19

N= 61-64 r>.25 (p<.05) r>.32 (p<.01) two-tailed

The first hypothesis was confirmed in that *Icount* and *Mecount* correlated both with ISEL and network size. ISEL did not correlate with network size. The significance of the result is that the new scales measure both perceived social support and network size. The results suggest a possible link between functional and structural variables. However, the power of the correlations between *Icount, Mecount* and network size are in the region of 0.75 and not at the 0.8 recommended as the acceptable level. With the latter proviso it is still clear that network size has a relationship with *Icount* and *Mecount* compared to ISEL and its subscales. The power values for the correlations between *Icount*, *Mecount* and ISEL are in the region of 0.91.

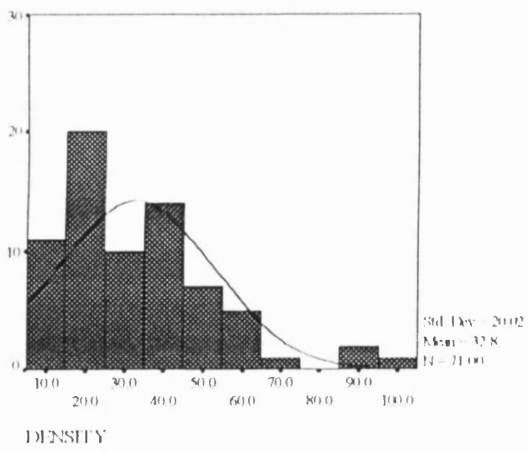

Fig. 6.3 Original distribution of network density scores

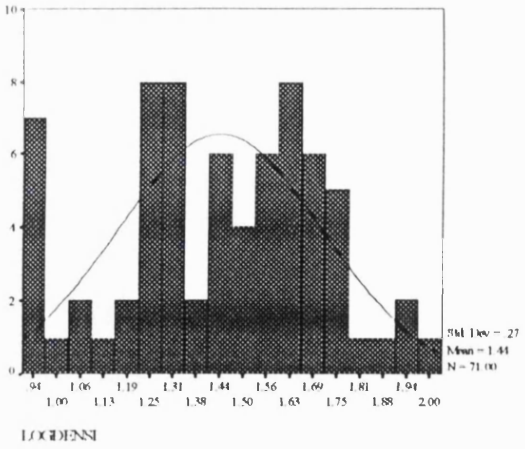

Fig. 6.4 Distribution following logarithmic transformation of network density scores

These effects are not the result of a set to providing socially desirable responses given the lack of any significant correlations with the Marlowe-Crowne (1960). The effect cannot be attributed to the high Cronbach alpha's of the *Icount* and *Mecount* as the total ISEL scale, with a high alpha value, also had a non-significant correlation with network size.

The second hypothesis was also confirmed that people who report high density networks show a higher correlation between *Icount* and *Mecount*.

The Reciprocity scales and Network Density as a continuous variable

Inspection of the distribution of network density scores indicated that they were negatively skewed (figure 6.3). The distribution was normalised using a logarithmic (base 10) transformation (figure 6.4). Correlations were then calculated for Icount and Mecount controlling for network size. The correlations between Icount, Mecount and network density were non significant (Icount r = .06; Mecount r = .13; N = 65; n.s.). The significance of the lack of a correlation is that it suggests network density is not detected in discrete continuous steps but as a dichotomous variable.

The Reciprocity scales and Network Density as a dichotomous variable

In order to examine network density effects the total population was split using the median value = 28. The obtained correlations are presented in table 6.7.

Table 6.7 Correlations of Icount and Mecount scales with ISEL, Density > = 28 or < 28

Scale	1	2	3	4	5	6
1. Icount		.61	.64	.61	.34	.59
2. Mecount	.99		.58	.53	.27	.53
3. Iselapp	.37	.34		.69	.53	.84
4. Iselbel	.52	.50	.64		.64	.91
5. Iseltang	.56	.58	.45	.64		.78
6. Iseltot	.60	.57	.78	.91	.80	

N = 25-27 r > .39 (p < .05) r > .50 (p < .01) two-tailed *high density in bold

Using Fisher's *r* to Z transformation it was found that the correlation of 0.99 between *Icount* and *Mecount* in the high density condition was significantly higher than the correlation of 0.61 in the low density condition. No other correlations are significantly higher. The correlation between Iseltang and *Mecount* illustrates the difference between the two density conditions, in the high density condition the correlation r = .58 (p < .01) and in the low density condition r = .27 (n.s.). The correlations between three subscales of the ISEL (iselapp; iselbel; iseltang) are broadly similar as is the total ISEL scale indicating that the internal structure of the ISEL is maintained in both conditions. The results can be interpreted as indicating that for people in the low network density group the relationship between *Icount* and *Mecount* has less connectivity. The same is not the case for the three ISEL subscales structure.

The Reciprocity factors and Self-esteem

The third hypothesis was that there would be a correlation between *Icount,Mecount* and Self-esteem. The hypothesis was not confirmed as no significant correlations between the *Icount*, *Mecount* and Self-esteem (*Icount* r = .08; *Mecount* r = .20; N = 63;

n.s.) were found. Cronbach's alpha for the Self-esteem scale was very high at 0.99 (Mean = 4.65; std.dev = 1.56; N = 74).

Examination of constructed reciprocity variables:

The next section of the chapter considers the effects of constructing three variables to measure reciprocity and their relationship to perceived social support, self-esteem, network size and network density. The first constructed variable was the ratio variable as used in equity theory. Ratiocan was constructed by dividing *Icount* by *Mecount*. The means and standard deviations are shown in table 6.8. Correlations with the ISEL and Self-esteem are summarised in table 6.9. Figure 6.5 shows the distribution of ratiocan in the current population.

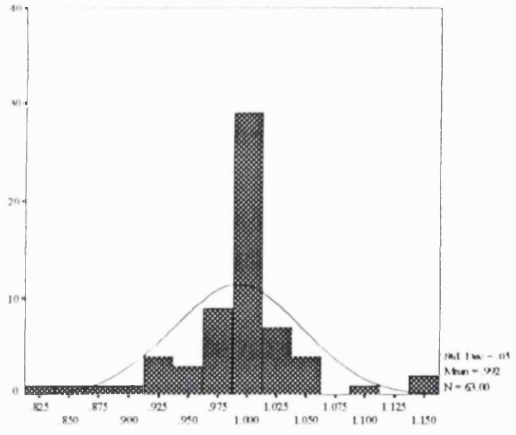

Figure 6.5 distribution of ratiocan

The second reciprocity measure was the difference variable. Diffcan was constructed by subtracting *Mecount* from *Icount*. Fig 6.6 shows the distribution of diffcan in the current population.

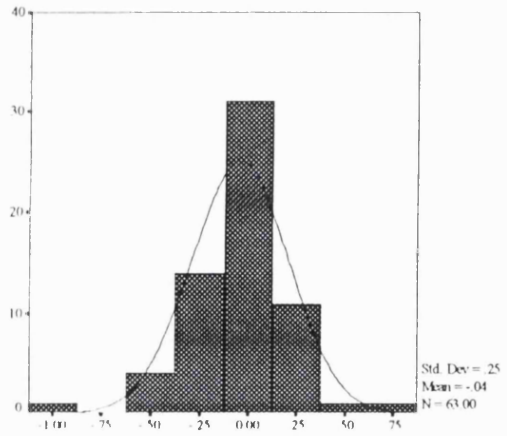

Figure 6.6 Distribution of diffcan

One effect of calculating a difference variable is that there is an attendant problem of reduced reliability. As quoted in chapter 1 the classical formula for calculating the reliability for a difference score (r_{12}) is given by Nunnally (1978) and John (1988) as:

$$difr_{12} = \frac{\sigma^2_{11}r_{11} + \sigma^2_{22}r_{22} - 2r_{12}\sigma_1\sigma_2}{\sigma^2_{11} + \sigma^2_{22} - 2r_{12}\sigma_1\sigma_2} \qquad \text{eqn 6.1}$$

A significant problem for difference scores is that if the two scales from which the difference score are constructed are highly correlated then the internal scale reliability falls markedly as a function of the alpha values of the original scales. Figure 6.5 illustrates the effect when the variance of the two scales are the same for the current scales. The maximum reliability of a difference score is when there is no correlation between the two scales and is equal to the original alpha. For the current scales of *Mecount* and *I count* the correlation between them is high (r=.87). Even given that the initial cronbach alphas are high (alpha's = .97) the effective attenuation results in a reliability of .77. While the reliability value is low it is nevertheless useable. The means and standard deviations are shown in table 6.8. Correlations with the ISEL and Self-esteem are summarised in table 6.9.

The third reciprocity measure constructed was a multiplicative variable. Multican was the simple product of *Icount* and *Mecount*.

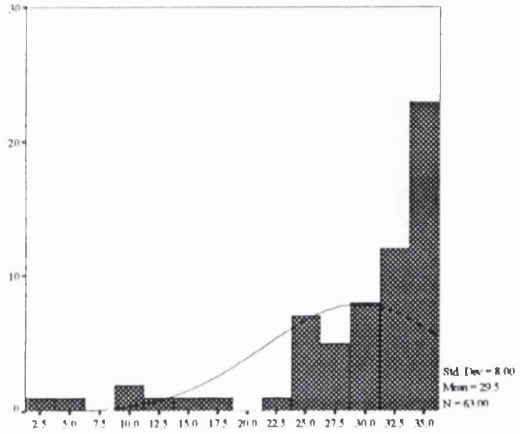

Figure 6.7 Distribution of multican

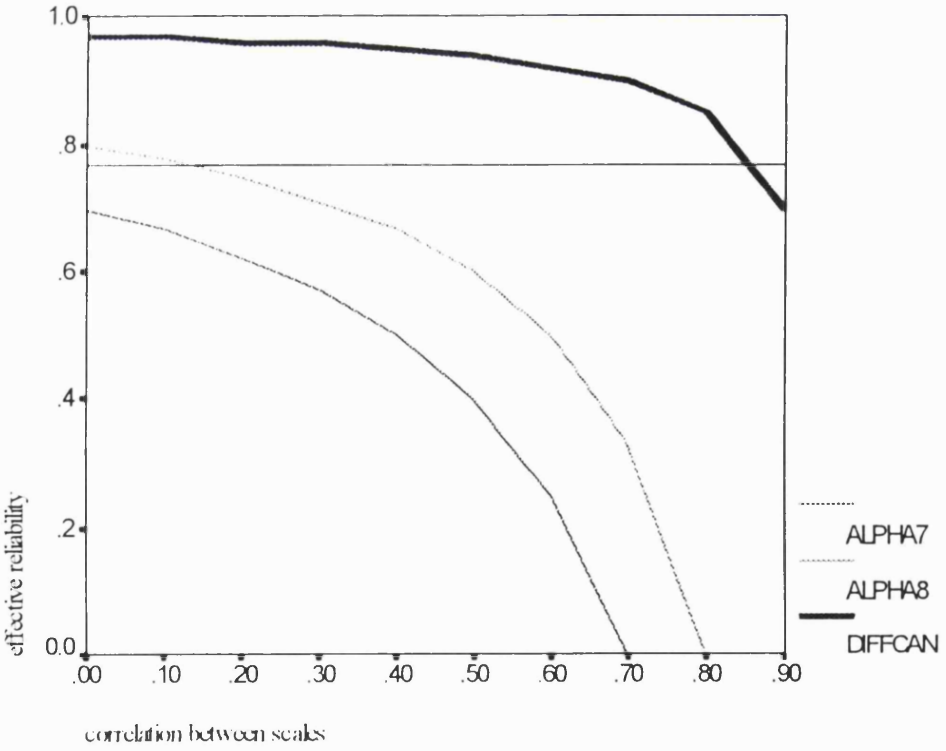

Figure 6.8 Graph illustrating the effect scale correlation on reliability

Table 6.8 Summary statistics of the constructed reciprocity measures

Variable	Mean	Std Dev	Minimum	Maximum	N
Ratiocan	.99	.05	.82	1.15	63
Diffcan	-.04	.25	-1.00	.80	63
Multican	29.49	8.00	2.24	36.00	63

Table 6.9 Correlations of Ratiocan,Diffcan,Multican with ISEL, Self-esteem, network size

Scale	1	2	3	4	5	6	7	8
1. Ratiocan								
2. Diffcan	.96							
3. Multican	-.18	-.12						
4. Iselapp	.31	.25	.41					
5. Iselbel	.38	.31	.51	.78				
6. Iseltang	.37	.31	.39	.70	.81			
7. Iseltot	.38	.31	.46	.87	.94	.91		
8. Self-esteem	-.23	-.25	.15	-.12	.04	-.02	.02	
9. Network size	-.02	-.05	.33	.04	.15	.03	.11	.00
N= 61-64		r>.25 (p<.05)		r>.32 (p<.01)				

The method of calculating reciprocity had a clear effect on the way that reciprocity correlated with the index variables of ISEL, Self-esteem and Network size. These differential relationships are, in part, a function of the intercorrelations between the three reciprocity measures. There was a medium positive correlation between Ratiocan and Diffcan. In contrast Multican had small negative correlations between Ratiocan and Diffcan.

The $ISEL_{total}$ showed significant correlations with all three reciprocity measures, though the pattern was towards more significant correlations with Ratiocan and Multican. $ISEL_{belonging}$ had a large correlation with Multican (r=.51) that is considerably different in the overall pattern of correlations.

Self-esteem was negatively correlated to both Ratiocan and Diffcan but positively correlated to Multican. The only significant correlation, however, was between Self-esteem and Diffcan. For the reciprocity factors there were no correlations approaching statistical significance.

Network size had a medium correlation with Multican but had no correlation with both Ratiocan and Diffcan. The large correlation between Multican and $ISEL_{belonging}$ also reflected the correlation between Network size and Multican.

In order to compare the significance of the present observed correlations they were contrasted with the expected pattern of correlations hypothesised in chapter 2 using the formula linking the expected observed correlation R and the expected true correlation (Kaplan, 1994) $R = 0.3\sqrt{r_{11}r_{22}}$.

Table 6.10 Original (A) and Simulated (B) Correlations of Ratiocan,Diffcan,Multican with ISEL, & Self-esteem

Scale	Ratiocan	Diffcan	Multican
A. Iseltot	.38	.31	.46
A. Self-esteem	-.23	- .25	.15
B. Iseltot	.28	.25	.28
B. Self-esteem	.29	.26	.29
N= 61-64	r>.25 p<.05		

Table 6.10 gives the results of the calculations compared with the original correlations. The simulated correlations for $ISEL_{total}$ are uniformly lower than those obtained. Continuing the simulation, using the Fisher *r* to Z transformation results in no significant differences in the correlations although the Multican correlation approaches significance at the $\alpha = .05$ level (one-tailed). Conversely the simulated correlations for Self-esteem are uniformly higher than those obtained. A similar Fisher *r* to Z transformation showed no significantly different correlations. Thus, the obtained correlations are within the limits of those that would be expected. The above simulation makes the minimum set of assumptions about the underlying processes.

DISCUSSION

The two reciprocity factors, *Icount* and *Mecount*, significantly correlated both with the ISEL (a measure of perceived social support) and network size but the ISEL had no significant correlation with network size. Table 6.11 gives comparison

correlations found in previous studies that predominantly report correlations with network size and enacted social support. The relevance of the finding is that the factors are linked to both functional and structural social support indices.

Table 6.11 Comparison correlations reported in previous studies between social support and social network size

Study	Perceived SS	N	Enacted SS	N
(Barrera, 1981)	.00	86	.24*	86
(Sarason et al., 1983)	.21-.34* (ssq)	194	.17* (issb)	194
(Stokes & Wilson, 1984)			.13 (issb)	179
(Sandler & Barrera, 1984)	.04 (assis)		.32* (issb)	45
Current study	.34**	61		

*p < .05 **p < .01

In keeping with the prediction, people in high density networks showed a significantly larger correlation between the two reciprocity factors, *Icount* and *Mecount*, suggesting that these factors are linked not only to the number of people in the network but also reflect the network configuration. The lower correlation between *Icount* and *Mecount* in low density networks suggests that it is not that there are fewer people with whom to transact, since network size was controlled, but that the perceived pattern of the relationships influences reciprocal perceptions. In high density networks there is a higher probability that people are equally dependent on and depended on by others, whereas in low density networks there is more variability between being dependent on and depended on by others.

Predictably there was no significant correlation between the ISEL and Self-esteem given that the $ISEL_{self\text{-}esteem}$ scale was not included because of its poor scale characteristics.

There was also no support for the hypothesis linking the *Icount* and *Mecount* to Self-esteem. One explanation for the lack of a link is that self-esteem is a global

variable whereas *Icount* and *Mecount* are specific variables. Items on the self-esteem scale refer to general statements e.g., "I take a positive attitude toward myself", in comparison to the particular statements on *Icount* and *Mecount* e.g., "There are people in my life who I can count on to listen when talking about an intimate relationship". If this explanation is correct then there would be either an intervening variable or a more global variable that would provide the linkage. A higher order factor analysis was undertaken on the all the items of the three scales. Three factors were extracted accounting for 81.3% of the total variance (factor 1 eigenvalue 21.75; 60.4% of total variance; factor 2 eigenvalue 6.18; 17.2% of total variance; factor 3 eigenvalue 1.34; 3.7% of the common variance). In support of the explanation none of the self-esteem items loaded with either *Icount* or *Mecount.*

However, when reciprocity measures were constructed from the two factors a different pattern emerged with only the correlations between *Icount*, *Mecount* and ISEL remaining consistent. Taken together these two findings suggest that the format by which reciprocity is calculated does generate different outcomes. All the reciprocity measures loaded on an existing measure of received social support in a predictable way.

Baumeister and Leary (1995) reviewed the literature on the need to belong and noted that in the social support literature practical assistance is secondary to the belongingness in the link to psychological well-being. The present results provide support for the need to belong hypothesis in that practical assistance is not valued as highly as social relations. The items on the two factors showed that items related to loaning and borrowing had high loadings. Making loans and borrowing are social exchanges that occur within a social network and are different to permanently being given or receiving something. These social exchanges are represent reciprocal relations and are symbolic of being social integrated or belonging to a group. As discussed in the introduction money can also be loaned or borrowed and perhaps represents a generalised social exchange.

A counterintuitive finding emerges from the relationship between belonging and network density. It was hypothesised that people who perceived themselves in a high density group would have a higher correlation with the ISEL belonging subscale than those in the low density group. In the current data the pattern of correlations was reversed with the lower correlations being present in the high density network group. Interestingly the intercorrelation between the two scales differed in the two network density groups with the higher intercorrelation being found in the high network density group. The change in intercorrelation was not accompanied by a significant change in the total ISEL correlation (or the pattern of the ISEL subscales) with both scales and indicates that the higher intercorrelation was not an artifact of splitting the group but of the increase in network density. The collorary is that the ISEL is relatively insensitive to changes in network density.

Thus, the *I count on* and *Me count* on scales are potentially sensitive not only to a functional variable (social support as measured by the ISEL) but also the structural variable of network density. Additionally the two scales are correlated to the structural variable of network size.

In the constructed reciprocity variables the use of a difference score produces a pattern of correlations that indicate the difficulties in using such a procedure. The use of a multiplicative score generates a pattern of correlations similar to the original scales. The analysis would suggest that a multiplicative score is the one to use if one score is to be obtained for a measure of reciprocity.

The concept of a virtual social network is indirectly supported by the present results. The findings also indicate that the developed scales are measuring the exchange process rather than simply the content of the exchange. If the present results are replicable then the implications are that reciprocity is a key variable in the linkage between functional and structural variables within the social support literature. The level of the current correlations with network size and the two

scales are remarkable given that in the wider literature the usual effect sizes are in the order of .3 (Lakey & Drew, 1997).

One significant limitation in the social support literature is its focus on received social support. There is currently no measure specifically designed to measure support given. Accordingly the low correlations with the ISEL are only indicative that the *Me count on* scale is measuring support provided compared to the *I count on* scale. Further evaluation of the two scales will need to examine their relationship with other measures of reciprocity in order to assess the validity of the present scales.

The same caveats that have been made in previous discussions apply with respect to the population sample with respect to homogeneity and the number of subjects. That the population is similar to others is supported by the similar demographic profiles across the studies and any non-specific factors (e.g., high anxiety) will be controlled for. The participants are not representative of reciprocity, *per se*, but allow for the technical examination of the reciprocity construct.

Chapter 7: Confirmatory factor analysis and assessment of the validity of the developed reciprocity measure

INTRODUCTION

The present chapter reports an analysis of the validity of the developed reciprocity scales *Icount and Mecount*. Prior to undertaking validity measurement it is important to demonstrate that the scale's internal consistency has been established. In chapter 6 the Cronbach alpha coefficients of *Icount and Mecount* were calculated at 0.97. All alpha coefficients are related to scale length, such that the more items on a scale the higher scale reliability. For a scale of 15 items the level of internal consistency observed is very acceptable. In the present thesis high alpha coefficient's are necessary because of the attenuation in reliability that occurs when difference scores are calculated. The majority of studies reporting reciprocity calculated a difference score with scales that had relatively low initial coefficient alphas in the range of 0.7.

As there are different types of validity (e.g., criterion or concurrent validity; construct validity) its measurement consists of gathering evidence to suggest that the developed scale measures what it purports to measure (Nunnally, 1978). Typically the process is that after assessing internal consistency the next stage is to demonstrate criterion validity. Criterion validity is the degree to which the new scale scores correlates with another established scale that measures a similar construct. Within the published literature there is only one scale of adequate internal reliability that measures reciprocity, the Interpersonal Relationship Inventory (IPRI) (Tilden, Nelson, & May, 1990).

The definition of reciprocity was given as : "the perceived availability or occurrence of an exchange of emotional or tangible goods or services, or the returning of emotional or tangible goods or services" (Tilden et al., 1990 p.338).

Scale items are listed at table 7.1. The definition closely matches the way in which reciprocity has been presented in the current thesis. Though the definitions are similar in the detailed psychometric analysis presented by Tilden (1990) it was found that there was some overlap between the support scale and the reciprocity scale. The authors advise that "Continued psychometric study is required of the reciprocity subscale, and it should be used with some caution until that time p.342". This advice led Frohlich (1997) in a subsequent study of the psychometric properties of the IRI, with a homeless population, to exclude the Reciprocity scale. For the Support scale they reported Cronbach alphas of 0.90 and for the Conflict scale of 0.83. Both these alphas are commensurate with values reported by (Tilden et al., 1990) indicating that the scale has acceptable psychometric properties. Given that the IPRI is the only comparison scale a factor analysis of the IRI was undertaken prior to its use for assessing validity.

The overlap between the Support and Reciprocity scales may not be attributable to measurement artifact but may actually indicate a relationship. Confirmation of the internal structure of the IPRI is given by the absence of a correlation between the Support and Conflict scales as would be expected. However, Reciprocity may be linked to Support and therefore would be expected to correlate to some degree though Reciprocity should be seen to either have a low correlation or potentially negative one with the Conflict scale.Validation of the Reciprocity scale would therefore expect those relationship patterns.

In the previous chapter it was shown that the calculation of reciprocity materially determined the relationship with other variables. The use of a difference, ratio or multiplicative calculation resulted in different results even given that the predicted effect size was kept constant. The continued use of these three methods is not parsimonious.

There are two values for Reciprocity using the current measurement method. There are other methods of determining reciprocity. For example, reciprocity

could be defined as balanced when *Icount=Mecount* and unbalanced when *Icount≠ Mecount*. A dummy variable could then be constructed and used in subsequent analyses to group individuals who had balanced and unbalanced reciprocity scores. In particular, evidence for construct validity would be shown if having grouped the individuals a criterion measure was also able to predict similar groupings. A further development could be to split the unbalanced group into two such that *Icount* > *Mecount* and *Icount* < *Mecount*. The latter groups would represent those described by Ingersoll-Dayton & Talbott (1992) as minimisers and maximisers, with the balanced reciprocity group representing the coinciders group.

A further way of determining reciprocity using the two scale scores would be to use them in a multiple regression analysis. Construct validity would be seen if in a model of reciprocity, the two scale scores, used as independent variables, were able to independently contribute to predicting the dependent variable. The advantage of these methods of calculation is that they are independent of the technical problems encountered in chapter 6.

Construct validity would also be demonstrated if the reciprocity measure replicated previous findings or if a difference was observed it could be explained with reference to known relationships with other variables.

Specific Hypotheses

1. The Icount and Mecount scale characteristics found in chapter 6 could be replicated with respect to internal consistency; dimensionality; network density and self-esteem;

2. That there would be a large significant correlation with the reciprocity scale of the IRI as evidence of the criterion validity;

3. That linear logical relationships of Icount and Mecount could group individuals that were predictable by the reciprocity scale of the IPRI as criterion measure and that Icount would predict IPRIreciprocity.

METHOD

Participants

Participants were 94 undergraduates attending a higher educational establishment in London. At the time of the study they were in the first term of their first year. They ranged in age from 18-39 years. The mean age of the participants was 20.5 years (std.dev. = 4.0) and 81 per cent of the participants were female. Ninety-six per cent of the participants recorded their marital status as single. Forty-one per cent of the participants were firstborns (median = 2). The occupational status of the parents was recoded into a class variable using the OPCS (1991) classification. Thirty-eight per cent of the participants were coded as class 2 (median = 1). The median number of people reported was 15 (range 5-15). The median density reported was 32.00. The minimal number of participants for a factor analytic study when there are 39 items and an estimated effect size of 0.3 is 82 (Baggaley, 1982).

Instruments

The reciprocity scales, *Icount and Mecount*, as developed in chapter six were used without modification. The IPRI (Tilden et al., 1990) was used to provide construct validity for the reciprocity scales. The items of the reciprocity scale are given at table 7.1. As in the previous chapter Self-esteem was measured using the scale developed by Rosenberg (1965) that continues to be regarded as having good psychometric properties (Gray-Little, Williams, & Hancock, 1997). Network density and size was measured using the procedure reported by Hirsch (1979; 1980) as previously described.

Table 7.1 Items used on the Reciprocity scale

Five point Agree/Disagree scale
2. Within my circle of friends, I get just as much as I give
4. I'm available to my friends when they need to talk
5. When I have helpful information, I try to pass it on to someone who could use it
6. I think I put more effort into my friends than they put in to me
8. I don't mind loaning money if a person I care about needs it
10. I'm satisfied with the give and take between me and people I care about
13. I'm happy with the balance of how much I do for others and how much they do for me
15. When I need help, I get it from my friends, and when they need help, I give it back
Five point Frequency scale ranging from never to very often
26. I let people I care about know that I appreciate them
28. Some people come to me for a boost in their spirits
31. I tell others when I think they're great
34. Some people I care about come to me for advice
39. I let others know I care about them

Procedure

Each participant anonymously completed a pack containing the self-report questionnaires. Each participant completed the pack in a group session. The order of scale presentation was randomised. Debriefing occurred on a group basis at the end of the session. A total of 100 questionnaires were distributed of which 94 useable questionnaires were returned. A response rate of 94 per cent.

RESULTS

Demographic Variables

Correlations between the demographic variables are presented in table 7.2. In keeping with the mean age of the population (mean = 20.50 years; std.dev. = 4.00) 90 per cent of the population reported that with respect to their marital status they were single. Partial correlations were carried out to control for the effects of marital status. There was no change in the significance of the observed correlations. Further partial correlations controlling for sex of participant and language did not change the significance of the observed correlations. The population characteristics of the participants age, sex, marital status and people were similar to those of the previous chapters. There is variation between the population in chapter six with

respect to birth order and class. The correlation between Age and Class was statistically significant. Partial correlations controlling for class did not change the pattern of observed correlations. There was also a difference in birth order although the difference was not statistically significant.

Table 7.2 Demographic correlations

	1	2	3	4	5	6
1. Age						
2. Sex	.00					
3. Marital	.48	.10				
4. Lang	.05	.21	.11			
5. Border	-.02	.15	-.14	.08		
6. Class	.31	-.13	.05	-.12	.05	
7. People	.05	.00	-.12	-.15	.02	.09

N=88 r > .20 (p < .05) r > .27 (p < .01) two-tailed

Factor analysis of the IPRI Scales

A confirmatory factor analysis was undertaken of the Interpersonal Relationship Index (Tilden et al., 1990) using a principal components analysis and varimax rotation as reported in the original study. Table 7.3 reports the eigenvalues, the scale reliabilities for both the original and current study and the congruence coefficients for each factor. The observed factor structure is reported in table 7.4 with the originally reported structure for comparison The scree chart is presented at figure 7.1.

Table 7.3 Eigenvalues and Cronbach alphas for the Interpersonal Relationship Inventory

Factor	Eigenvalue	%variance	α-value	congruence
Current study:				
Support	11.31	28.30	.88	.97
Conflict	3.72	9.30	.83	.98
Reciprocity	2.17	5.40	.87	.95
Original study:				
Support	12.10	31.02	.92	
Conflict	4.10	10.51	.91	
Reciprocity	2.30	5.89	.83	

Table 7.4 Factor structure and rotated factor loadings of the current study (n=94) of the IPRI and previously reported (n=340)

Items	Current study factors			Original study factors		
	1	2	3	1	2	3
15. Give and take help (r)	.80		.31	.74		
10. Satisfied with give and take (r)	.66			.68	-.33	
13. I'm happy with the balance (r)	.59			.56		
2. I get as much as I give (r)	.57			.61		
6. I put more effort into friends (r)	.53			-.48	-.35	
34. People ask me advice (r)	.46		.52			.63
31. I tell others they're great (r)	.36		.57			.80
28. People come to me (r)	.71		.30	.53		
26. I let people know I appreciate (r)			.70			.79
4. I'm available (r)			.52			.51
39. I let others know I care (r)			.51			.83
8. I don't mind loaning (r)			.47			.32
5. I pass on info (r)			.45			.37
14. I can count on friends (s)	.81			.77		
7. Someone I can turn to (s)	.79			.74		
11. Someone I could go to (s)	.78			.74		
18. Stands by me (s)	.77			.74		
9. I can talk openly (s)	.76			.72		
21. All I have to do is ask (s)	.64			.71	-.33	
37. Someone believes in me (s)	.61		.43	.61		
22. Talk things over (s)	.61			.64	-.30	
17. Safe to reveal weaknesses (s)	.55		.41	.68		
1. Makes me feel confident (s)	.47			.70		
3. Share similar views (s)	.41		.33	.68		
23. Enjoyable times (s)			.54	.49		
19. Neighbors who help (s)				.39		
32. Wish people were more sensitive (c)	-.44	.62		.33	.60	
29.Takes advantage of me (c)	-.37	.57			.69	
36.Trouble pleasing someone (c)	-.37	.62			.71	
38. Expect too much of me (c)		.72			.75	
30. Some people are a burden (c)		.68			.69	
27. Embarrassed by someone (c)		.58			.59	
16. Someone who gets mad (c)		.58			.59	
33. Make me do things (c)		.57		.30	.69	
35. Tension (c)		.52			.74	
25. Invade my privacy (c)		.50	-.30		.64	
24. Rather not do for others (c)		.48			.30	
12. Too pushy (c)		.46			.54	
20. Can't count on (c)		.39			.57	

(s) = social (c) = conflict (r) = reciprocity only loading > =.30 shown

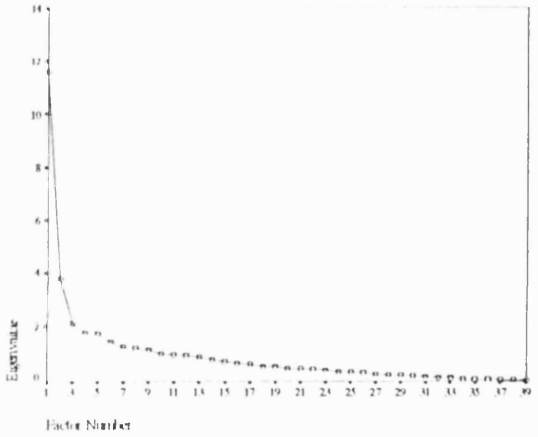

Figure 7.1 Scree chart of the IPRI

The results in table 7.3 show that the first three factors account for broadly similar levels of common variance, 43 and 47.42 per cent respectively. The Cronbach alphas are also in the same range. The high congruence coefficients are indicative that the factors in both studies are comparable. Inspection of table 7.4 shows a similar pattern of item loading on reciprocity. In the present study seven items on the reciprocity factor loaded onto the support factor. Five of the these items are concerned with a sense of balance in giving and receiving, and replicate the original study in this respect. Eight items of the reciprocity factor loaded as predicted from the original study onto the reciprocity factor.

The concept of reciprocity, based on the IPRI, is divided into two parts, a sense of balance and doing for/giving back as separate from support. The results show that there are three factors in the IPRI. Accordingly, three scale scores were created from the mean unweighted sum of the thirteen item loadings on each obtained factor and used in subsequent analyses.

Factor analysis of Icount and Mecount

A factor analysis was undertaken on the Icount and Mecount items using principal components and a varimax rotation. In the previous studies an oblique rotation was used as the initial pool of items was considered to be highly intercorrelated. In the present study a varimax rotation was specified because the selected items were

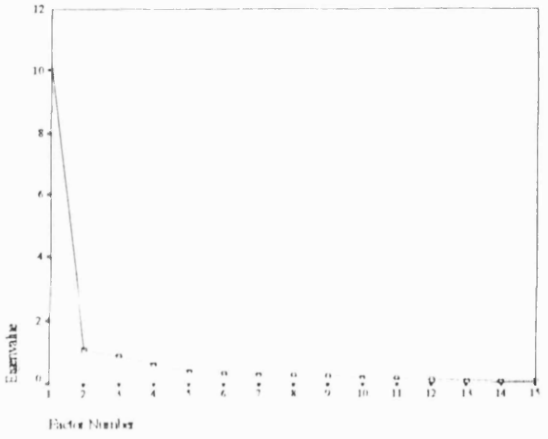

Figure 7.2 Scree chart of Icount

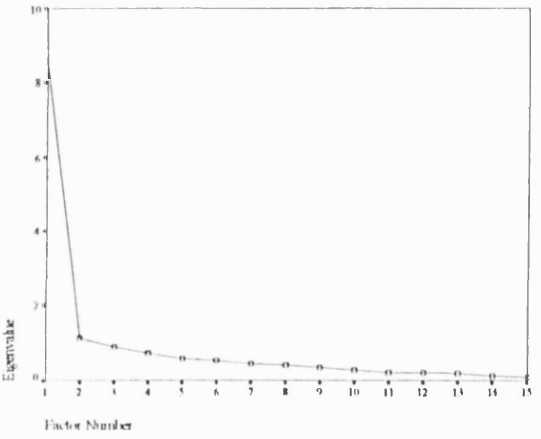

Figure 7.3 Scree chart of Mecount

considered to comprise separate factors. Further the number of factors was not specified, that is, all eigenvalues over 1 were extracted. The scree charts for *Icount* and *Mecount* are given at figure 7.2. and figure 7.3. The item loadings for *Icount* and *Mecount* with mean values and standard deviations at tables 7.5. and 7.6.

Table 7.5 results of the factor analysis for Icount

	fact1	fact 2	Mean	SD
5.Be listened to when talking about an intimate relationship	.93	.54	5.5	1.1
1.Be bought a drink by them in a public house/nightclub	.92	.51	5.5	1.1
4.Borrow a commonplace article (e.g., a calculator)	.90	.48	5.5	0.9
8.Borrow a book that they have suggested you read	.90	.49	5.4	1.0
2.Be listened to when you are angry with a third person	.89	.58	5.4	0.9
3.Borrow a CD/tape over a weekend	.89	.33	5.6	1.0
15.Telephone you during the evening when you are unwell/upset	.88	.56	5.4	1.0
6.Be given a hug when you return from holiday	.87	.45	5.4	1.0
7.Be listened to when talking about a third person (gossip)	.87	.67	5.4	0.9
14.Be given advice over a lunch break on a relationship problem	.85	.77	5.3	1.1
9.Supply small amounts of groceries when you run out	.77	.34	5.3	1.1
10.Go shopping for a specific gift for you	.76	.73	5.1	1.3
12.Be offered advice on clothing when out shopping	.71	.74	5.2	1.0
11.Purchase items for you as part of their own shopping	.54	.79	5.2	1.0
13.Wash up after a meal that you had prepared	.34	.75	4.9	1.4

Table 7.6 factor analysis for Mecount

	fact1	fact2	Mean	SD
5.Listen to them talking about an intimate relationship	.92	.50	5.5	1.0
2.Listen to them being angry about a third person	.87	.58	5.5	0.9
14.Give advice over a lunch break on a relationship problem	.86	.56	5.4	1.0
7.Listen to them talking about a third person (gossip)	.84	.44	5.3	1.0
6.Give them a hug when they return from holiday	.77	.71	5.3	1.2
8. Loan a book that you have suggested they read	.76	.70	5.2	1.2
15.Telephone them during the evening when they are unwell/upset	.74	.61	5.4	0.9
1.Buy a drink for them in a public house/nightclub	.71	.70	5.4	1.1
4.Loan a commonplace article (e.g., a calculator)	.69	.76	5.2	1.2
3.Loan a CD/tape over a weekend	.68	.74	5.5	1.1
10.Go shopping for a specific gift for them	.64	.77	5.2	1.3
12.Offer advice on clothing when out shopping	.55	.76	5.1	1.2
11.Purchase items for them as part of your own shopping	.48	.79	4.8	1.3
9.Supply small amounts of groceries when they run out	.42	.78	5.2	1.2
13.Wash up after a meal that they had prepared	.31	.60	4.9	1.3

For *Icount* two factors with eigenvalues over one were extracted and rotated. The first factor had an eigenvalue of 10.31 and accounted for 68.9 per cent of the common variance. The second factor had an eigenvalue of 1.08 and accounted for 7.2 per cent of the common variance. Overall the two factors accounted for 76 per cent of the common variance. For *Mecount* the first factor had an eigenvalue of 8.58 and accounted for 57.2 per cent of the common variance. The second factor had an eigenvalue of 1.16 and accounted for 7.7 per cent of the common variance. The two factors accounted for 64.9 per cent of the total common variance. There were high shared loadings on the two factors extracted and because of this the highest item loading was used to allocate the item to the factor. The item loadings for *Icount* indicated that one factor comprised of items, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 15 and the second factor comprised items 11, 12 and 13. However, the shared loadings on each of the items suggested that there was considerable overlap between the two factors. The item loadings for the first factor of *Mecount* were 1, 2, 5, 6, 7, 8, 14, 15. The second factor comprised items 3, 4, 9, 10, 11, 12, 13. In order to explore the factor structure further with the goal of finding a simpler structure, and to account for the shared loadings, a common factor analysis was undertaken. In factor analysis using principal components analysis the diagonal values in the correlation matrix are initially set at one and hence all the variance is extracted in the iterative procedure. Technically there are as many factors as variables.

However, common factor analysis is essentially an analysis of covariance, with the diagonal values being in the range 0-1. The item loadings suggested that there was substantial covariance in the matrix therefore common factor analysis was undertaken. The squared multiple correlations of the items for *Icount and Mecount* were calculated and inserted into the diagonal and rotated using varimax. The results are presented in tables 7.7 and 7.8.

Table 7.7 results of the common factor analysis for Icount

	fact1	fact 2
3.Borrow a CD/tape over a weekend	.92	
4.Borrow a commonplace article (e.g., a calculator)	.81	.42
1.Be bought a drink by them in a public house/nightclub	.79	.46
8.Borrow a book that they have suggested you read	.74	.48
5.Be listened to when talking about an intimate relationship	.71	.59
6.Be given a hug when you return from holiday	.68	.49
15.Telephone you during the evening when you are unwell/upset	.65	.58
9.Supply small amounts of groceries when you run out	.65	.34
2.Be listened to when you are angry with a third person	.60	.65
7.Be listened to when talking about a third person (gossip)	.58	.69
10.Go shopping for a specific gift for you	.51	.62
14.Be given advice over a lunch break on a relationship problem	.45	.85
12.Be offered advice on clothing when out shopping	.83	
11.Purchase items for you as part of their own shopping		.64
13.Wash up after a meal that you had prepared		.37

*item loadings < .30 not shown

Table 7.8 results of the common factor analysis for Mecount

	fact1	fact2
9.Supply small amounts of groceries when they run out	.68	
4.Loan a commonplace article (e.g., a calculator)	.67	.43
11.Purchase items for them as part of your own shopping	.67	
12.Offer advice on clothing when out shopping	.66	
10.Go shopping for a specific gift for them	.65	.41
3.Loan a CD/tape over a weekend	.64	.43
6.Give them a hug when they return from holiday	.61	.54
8. Loan a book that you have suggested they read	.60	.53
1.Buy a drink for them in a public house/nightclub	.60	.48
15.Telephone them during the evening when they are unwell/upset	.48	.56
13.Wash up after a meal that they had prepared	.43	
2.Listen to them being angry about a third person	.41	.74
14.Give advice over a lunch break on a relationship problem	.40	.73
7.Listen to them talking about a third person (gossip)	.75	
5.Listen to them talking about an intimate relationship		.88

*item loadings < .30 not shown

The results suggested that there is one factor within the matrix with certain item loadings (e.g., *icount13*) making a disproportionate contribution to the overall analysis. In order to assess the effect of this assumption the analysis was rerun without *icount13*. The subsequent analysis could not be rotated. Based on the assumption that there was one factor, scale scores were created from the mean unweighted sum of the fifteen item loadings on used in subsequent analyses. The congruence coefficients for the factors between chapter 6 and 7 were *Icount* =.96 and *Mecount* =.97.

Evidence for the unidimensionality of the scales is shown by the high Cronbach alpha's of the resulting scales *Icount* =. 96 and *Mecount* =.94. A supplementary measure of internal consistency is that of coefficient Θ, given as $(n/n-1) * (1-\lambda^{-1})$ where n=no. of items and λ =the first eigenvalue using principal components analysis (Armor, 1974). Coefficient theta can detect the presence of dimensionality in the correlational matrix. For *Icount* coefficient theta =.96 and *Mecount* =.94. Thus, there is convergence in assuming that there is one dimension in the scales in terms of internal consistency.

There is a distinction in the literature on scale dimensionality between internal consistency (Green, Lissitz, & Mulaik, 1977) and homogeneity (Gulliksen, 1950). Cronbach's alpha and coefficient theta are measures of the level of internal consistency, though the scale may also be multidimensional. A measure that reflects the homogeneity of the scale is the precision of alpha or the standard error of item intercorrelations (Cortina, 1993) and is given by:

$$\frac{SD}{((1/2 * k * (k-1)) - 1)^{1/2}}$$

where SD = standard deviation of item intercorrelations
and k = number of items.

For *Icount* the precision estimate of alpha = 0.11 and for *Mecount* the precision estimate of alpha =0.11. There are no probability tables for precision estimates and therefore the salience of the values are by inspection. However, the precision estimate of a perfect unidimensional scale (in the present context a tau-equivalent scale, items linearly related and separated by a constant value) would be=0.00. All the correlations in the intercorrelational matrix would be identical. Therefore a random selection of items would produce similar precision estimates, i.e, zero. In the present instance two samples of five items were randomly selected {3, 5, 6, 11, 14, 4, 8, 9, 12, 15,} using tables from Meredith (1967) from each of the two scales and precision estimates calculated on the basis that the two precision estimates should be non zero but the same. For *Icount* the precision estimates were both =0.35. For *Mecount* the precision estimates were 0.37 and 0.38. The scales were considered to consist of homogenous items.

Relationship between IPRI, Icount and Mecount

The IPRI was used to assess the construct validity of *Icount* and *Mecount* . Correlations between the scales are presented in table 7.9. The correlation between Ipreciprocity and *Icount* r=.52 has a power value that exceeds 0.99 (α=.05; two-tailed). The correlation between Ipreciprocity and *Mecount* r=.44 has a power value of 0.98 (α =.05; two-tailed). A similar pattern of correlations and power values are also found with Iprsocial. Non-significant and negative correlations are found as predicted between *Icount, Mecount* and Iprconflict.

Table 7.9 Correlations between IPRI, Icount and Mecount scales

Scale	1	2	3	4
1.Icount				
2.Mecount	.83			
3.Ipreciprocity	.52	.44		
4.Iprsocial	.55	.44	.81	
5.Iprconflict	-.02	-.07	.09	.06

N=93 r>.20 (p<.05) r>.26 (p<.01) two-tailed

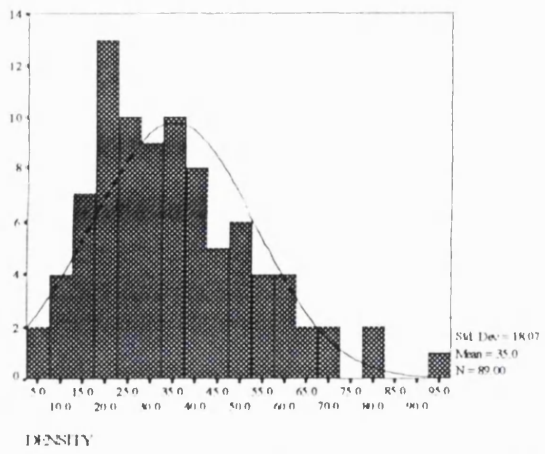

Figure 7.4 Distribution of network density

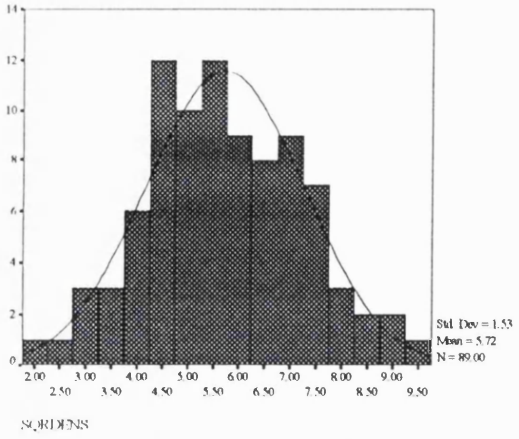

Figure 7.5 Normalised distribution of network density

The give and receive factors and network density as a continuous variable

The distribution of network density scores was negatively skewed (figure 7.4). The distribution was normalised using a square root transformation (figure 7.5). Correlations were then calculated for *Icount* and *Mecount* controlling for network size. The correlations between *Icount*, *Mecount* and network density were non significant (*Icount* r = .001 *Mecount* r = .07; N = 83; n.s.). The current finding replicated that in chapter 6.

The Reciprocity scales and Network Density as a dichotomous variable

In order to examine network density effects the total population was split using the median value = 32. The correlations are presented in table 7.10.

Table 7.10 Correlations of Icount and Mecount scales with IPR, Density > =32 or <32

Scale	1	2	3	4	5
1.Icount		.87	.38	.32	-.37
2.Mecount	.79		.31	.17	-.43
3.Iprieciprocity	.64	.62		.82	-.47
4.Iprisocial	.73	.67	.81		-.41
5.Ipriconflict	-.22	-.26	-.23	-.19	

N=42-43 r>.29 (p<.05) r>.37 (p<.01) two-tailed *high density in bold

Using Fisher's *r* to Z transformation the difference in correlations between *Icount and Mecount* in both the high and low density conditions were not significant. Further, the correlations between *Icount* and IPRIreciprocity; *Mecount* and Ipreciprocity were not significantly different as a function of density condition. However, the correlations between *Icount* and IPRIsocial (r=.73); *Mecount* and IPRIsocial (r=.31) were significantly different (p<.005) as a function of density condition.

As predicted IPRIconflict had a negative correlation with all the other scales indicating that *Icount* and *Mecount* were similar to IPRIreciprocity and IPRIsocial.

The Reciprocity Scales and Self-Esteem

Contrary to previous findings there was a correlation between *Icount* and Self-esteem (*Icount* =.21; p<.05; N=91). Similar to previous findings *Mecount* and Self-esteem were not correlated (*Mecount* =.18; n.s.; N=94). Cronbach's alpha for the total scale was .80 (Mean =4.67; std.dev.= 1.55; N=94).

The calculation of Reciprocity

In chapter 6 it was shown that the calculation of reciprocity as a difference, ratio or multiplicative score was problematic and resulted in differential outcomes as a function of the method of calculation. Rather than use a mathematically constructed single score the two scales were used to create two groups. The first

group comprised participants for whom the relation *Icount = Mccount* (N = 18) and represented the balanced reciprocity group. The second group (N = 72) comprised participants whose scores for the two scales were different. It was reasoned that the IPR reciprocity measure is a measure of support balance then it should be able to classify individuals into the two groups formed by the logical relations between *Icount and Mccount*. The results of a Discriminant analysis using SPSS are presented in table 7.11.

Table 7.11 Results of a discriminant analysis using IPR reciprocity as the predictor variable

Actual Groups	n of cases	predicted group membership			
		Balanced Reciprocity		Unbalanced Reciprocity	
Balanced Reciprocity	18	12	(66.7%)	6	(33.3%)
Unbalanced Reciprocity	72	29	(40.3%)	43	(59.7%)

Percent of "grouped" cases correctly classified: 61.11%

The group means for IPRIreciprocity were for balanced reciprocity 57.05 (std.dev. = 7.15) and for unbalanced reciprocity 51.06 (std.dev. = 8.03). Wilks' Lambda for IPR reciprocity was 0.91 and had an F value of 8.33 and was significant ($p < .005$). The test for equality of within-groups covariance matrices used Box' M (.35; $p = .56$) was not significant, hence the covariances were not significantly different. Further analyses were conducted with other variables but the predicted group membership was not significantly altered.

The results presented in table 7.11 show that the IPRIreciprocity classified just under two-thirds of the balanced reciprocity group correctly and was the only variable in the IPR that successfully did so. For both IPRIsocial and IPRIconflict Wilks' Lambda was not significant and so there is no significant difference between the mean levels of either support or conflict in the balanced or unbalanced reciprocity groups. Thus, there is evidence in terms of the validity of the constructed reciprocity measures that they are measuring reciprocity. It would not

be expected that there would be 100 per cent correct classification since the IPR reciprocity scale itself does not possess 100 per cent accuracy. A further limitation in the present study is the low absolute number of individuals in the balanced reciprocity group makes statistical comparisons problematic.

One further way that the validity of *Icount* and *Mecount* could be demonstrated would be to use a multiple regression analysis to determine which of the two scales load on the IPRIreciprocity scale. The IPRI scale is a measure of perceived received support (Frohlich & Founier, 1997). Therefore, it would be predicted that *Icount* should have the greater association with IPRIreciprocity. The results of the stepwise regression analysis is given at table 7.12.

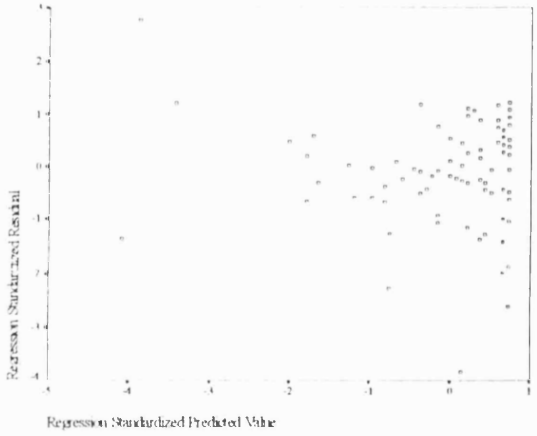

Figure 7.6 Plot of the standardised residuals against predicted values of IPRreciprocity

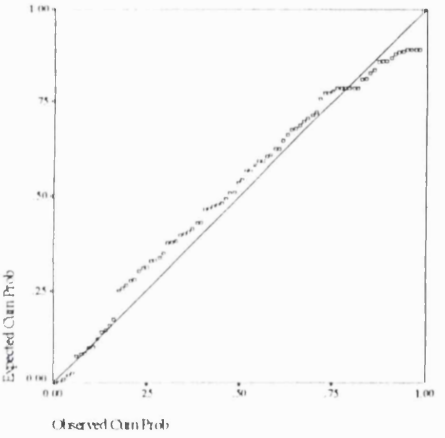

Figure 7.7 Normal P-P plot of IPRreciprocity

The normal P-P plot is given at figure 7.7 and shows that IPRIreciprocity is linear. The scattergram between the predicted values of IPRIreciprocity and the standardised residuals at figure 7.6. Ideally the plot should show no obvious pattern and hence that the residuals are random, meeting the test of homogeneous variance. There are three outliers, residuals that are more than three standard deviations from the mean. Accordingly, Cook's distance scores were calculated with only one score greater than one. It was not considered that the one residual would significantly alter the interpretation of the results. Inspection of the individual score indicated a larger than average difference between *Icount and Mecount.*

Table 7.12 Results of the Regression of *Icount, Mecount* on IPRIreciprocity

	SS	df	MS	F	probability
Regression	1629.12	1	1629.12	33.09	<.001
Residual	4332.47	88	49.23		

As expected *Mecount* was not included in the final regression equation. *Icount* accounted for 52 per cent of the variance in IPRIreciprocity. However, a major problem with the analysis was the presence of the large correlation between *Icount*

and Mecount (r = .83) and reflected in the large standard error. It is unclear how multicollinearity can be avoided within the measurement of reciprocity if two scores are employed using regression analysis. Potentially the two scales are always likely to be highly correlated.

Comparison of previously constructed reciprocity measures with IPR reciprocity

As in chapter 6 difference, ratio and multiplicative scores were calculated from *Icount and Mecount*. The calculated scores were then correlated with IPRIreciprocity, self-esteem and network size. The summary statistics are presented at table 7.13 and the correlations are presented in table 7.14.

Table 7.13 Summary statistics of the constructed reciprocity measures

Variable	Mean	Std.Dev.	Minimum	Maximum	N
Ratiocan	1.02	.11	.49	1.44	91
Diffcan	.09	.51	-2.33	1.67	91
Multican	28.75	7.49	2.67	36.00	91

Table 7.14 Correlations of constructed reciprocity scores with IPR reciprocity

Scale	1	2	3	4	5
1. Ratiocan					
2. Diffcan	.97				
3. Multican	-.03	.10			
4. IPRreciprocity	.13	.17	.53		
5. Self-esteem	-.04	.03	.28	.35	
6. Network size	.01	-.02	-.05	.07	-.11

N = 90 r > .20 (p < .05) R > .27 (p < .01)

The means and correlations followed a pattern seen in chapter 6. Diffcan and ratiocan scores had a large correlation between themselves but a small correlation with IPRIreciprocity. In contrast the multican had a small correlation with the diffcan and no correlation with the ratiocan. However, the multican had a large

correlation with IPRIreciprocity. With respect to statistical significance only multican was significantly correlated to IPRIreciprocity. There is a significant correlation between self-esteem and multican. Self-esteem also has a significant correlation with IPRIreciprocity. Network size did not correlate significantly with any of the variables.

DISCUSSION

The first hypothesis that the *Icount and Mecount* scale characteristics would be replicated with respect to internal consistency; dimensionality; network density and self-esteem was confirmed. The results support the findings in chapter 6. In particular the dimensionality of the scales was further supported by the additional analyses undertaken. The significance of these findings is that it would now be possible to calculate difference scores using the two scales and retain acceptable psychometric properties.

The second hypothesis was that there would be a large significant correlation with the IPRIreciprocity as evidence of criterion validity. IPRIreciprocity did significantly correlate with *Icount* ($r = .52$; $p < .01$; $n = 90$) and with *Mecount* ($r = .44$; $p < .01$; $n = 93$). The difference in correlation reflects the item wording on the IPRIreciprocity scale that emphasises one direction using the pronoun "I". A representative item, for example, is "I think I put more effort into my friends than they put into me".

The third hypothesis was that IPRIreciprocity could be used to predict group membership of individuals who had either balanced or unbalance reciprocity scores. The results of the discriminant analysis support the hypothesis. Further, the results of the multiple regression analysis found that *Icount* was a predictor variable for the IRPIreciprocity scale.
The results provide support for construct validity for *Icount and Mecount.*

The present chapter replicated and extended the findings in chapter 6 with respect to the development of *Icount and Mecount.* From the data available two major conclusions can be drawn about the measurement of reciprocity. The first is that a measure producing one score is unlikely to represent reciprocity. In the IPRI the reciprocity scale is correlated to the support scale that in turn has been demonstrated to measure received support (Tilden et al., 1990). Thus, one score would not capture the giving of support. Inspection of table 7.1 lists four 2, 10, 28, 34, out of the thirteen items that can potentially be construed as reciprocal. Table 7.4 gives the item loadings and indicated that only 28 and 34 loaded on the putative reciprocity factor. The wording of the items *28. People come to me* and *34. I let others know I care* clearly implied giving rather than receiving. However, the presence of just two items, that share an intercorrelation of 0.49, does not fully map the reciprocity construct. However, the creation of two measures also has associated problems. In chapter 6 it was shown that *Icount and Mecount* were both correlated with ISEL, a measure of received support. There was a difference in the size of the correlations, though not a significant difference, with *Icount* having a larger correlation as would be expected. The problem is that even if there was a significantly different pattern of correlations with ISEL *Icount and Mecount* themselves are highly correlated (chapter 7 r = .83; chapter 6 r = .87). The item wording of *Icount and Mecount* clearly distinguish between giving and receiving and in a way that is not a frequency or value based scale. The factor analytic results indicated that they comprised two unidimensional scales but they are still correlated and thus interpretation of the scales is at present tentative. The problem would not be resolved by reverse scoring of the items giving the underlying relationship between giving and receiving. In fact it would hardly be unexpected for the processes of giving and receiving to be linked but that linkage makes the measurement of reciprocity difficult.

Even given the problem of linkage the use of two scores is likely to better represent the reciprocity construct rather than a single score. The next stage in the measurement process is then to consider how the two scores are handled. In

chapter 6 it was shown that mathematical calculation of difference, ratio and multiplicative scores, while intuitively correct, introduces significant measurement error. If these errors can be controlled for, then the fact that these calculated scores behave in a consistent manner would recommend their use.

With respect to the distributions both difference and ratio calculations produced approximately normally distributed scores. Multiplicative calculation produced a positively skewed distribution of scores. The difference score was problematic with respect to scale alpha. The other two methods of calculation are themselves problematic though not with respect to scale reliability. The problem with ratio and multiplicative scores is that it requires the variances in both the measures to be equal otherwise caution is required the interpretation of the results. The two measures used are unlikely always to fulfil the condition. The use of multiple regression is also problematic given the problem of multicollinearity, though the results of the present chapter illustrate that *Icount* is more likely to be a measure of the received aspect of reciprocity. The preferred method would be to use the two measures and examine the logical relationship between them in terms of equality and then use that to divide individuals into groups. The present chapter considered two groups, balanced and unbalanced, a third group could be created by splitting the unbalanced group into positive and negative balance. The identification of individuals who report that they perceive themselves as having balanced relationships and then examining the relationship of other variables would seem to be a sound research strategy.

The second major conclusion concerns the conceptual nature of reciprocity and its relationship to social support. The fact that there is overlap between the item loadings in table 7.4 could be taken as a problem with the factor analysis. An alternative view would be to assume that there will always be some degree of overlap not a function of measurement error but because the constructs themselves are related. Support for the latter perspective comes from the factor analyses reported in the present thesis. If reciprocity is the construct that is embedded in

social relationships, as theoretically discussed by many authors, then it is likely to be within already defined social support measures. The implicit nature of reciprocity in the theoretical conceptualisations would suggest that there would be a significant correlation, a finding that is supported in chapter 6. Therefore, it may be that rather than labelling social support as social support a more precise definition would be to acknowledge that it is reciprocity that is being measured and related to other index variables, albeit to date, a one-sided version of reciprocity. The present thesis would suggest that there is scope for redefinition of social support not from a global to specific schema but to generalised and specific reciprocity. The lack of consistent relationships, rather than an absence, between structural social network measures and functional social support measures requires further investigation.

Chapter 8 The effects of physical relocation on social networks and perceived social support

INTRODUCTION

Moving to live in a different country can cause considerable change in psychological well-being and can be perceived as a stressful life event. However, these changes are not always perceived negatively and in part depend on the motivation for the move (Fisher, 1989). If the rationale for the move is resolved, in the sense that positive meaning can be derived from the transition, then it is unlikely that the stress of moving will produce adverse psychological consequences (Turner & Avison, 1992). There is a considerable literature on the effects of personality on adaptation to new environments (Eurelings-Bontekoe, Vingerhoets, & Tontijn, 1994). For example, in a study of army conscripts, low extraversion scores discriminated between soldiers identified as having homesickness, and those who had different psychopathology (Eurelings-Bontekoe, Verschuur, Koudstaal, van der Sar, & Duijsens, 1995). In contrast, little is known about the process of social network development when people move into a different country. In particular there is little research about whether some individuals are predisposed to be "social network builders" and as a consequence experience favourable psychological adjustment. In the initial stage of the move changes in the size and composition of the social network can be perceived as a significant problem given that there is also an attendant loss of social support. The loss of social support may not always be negatively perceived since social networks do not always provide positive support and can be experienced as problematic due to conflicted relationships (Acock & Hurlbert, 1993; Rook, 1997). Further, in studies that examine social network disruption there are often pathological processes operating concurrently and hence interpretation of the results is not unequivocal (Meeks & Murrell, 1994). Ideally a study that considered healthy individuals who voluntarily undertook to move abroad would offer a suitable intervention to consider the effects of physical relocation. Moreover, if the participants were moving not

because of work or educational commitments, with an attendant organisational structure that typically offers some support, then the effects of social network disruption could be interpreted without reference to the support provided by an organisational structure.

A prerequisite ability for developing networks may be dependent on the individual having a cognitive map of the number of people that they perceive necessary in their social network (Hammer, 1985). The ability to develop and sustain reciprocal relationships may be one individual difference variable that would distinguish between individuals who maintain psychological well-being and those who become psychologically disordered when confronted by a major environmental change. One step in assessing the effect of physical relocation on social network variables would be to undertake a longitudinal study using a general population sample. In such a study the relationship between social support and social network variables could be assessed. The "ideal" intervention would be a change in country with the maximal amount of social network disruption. If links between the participants and their existing social networks were further significantly reduced because of problems in accessing telephone and postal services then the effect of "social network building" could be examined. Clearly it would be unethical to implement such an intervention as a planned study. Fortunately, there are occasions when the intervention outlined occurs *in vivo*. There are many volunteer agencies who advertise for people to work abroad. These agencies offer various degrees of support to volunteers depending on the level of organisation that has been undertaken prior to their departure.

Following contact with the Community Volunteer Service (CSV), a national organisation for recruiting volunteers, a particular project was suggested that broadly met the above study criteria.

Project South Africa was established by an organisation in Britain with the express purpose of sending volunteers to "stimulate the development of volunteer

organisations in South Africa for South Africans". South Africa had experienced a major political change and as a consequence there were opportunities for aid agencies to offer personnel to work in areas that traditionally were not open to foreign nationals.

The particular project met the study criteria in terms of process: significant social network disruption, healthy participants, no organisational support, poor access to communication with established social network members, although the numbers of participants was limited. The project outline envisaged 20 selected volunteers who would spend four months in one of two major regions of South Africa. Ten of the volunteers were to be based in local projects based around Johannesburg (JHB) and ten based around Port Elizabeth (PE). Allocation to a particular project would be done randomly. The two regional areas cover a large geographical area and the volunteers would be dispersed some distance from each other. The group based around PE would have the greater separation. Each project could only accept one volunteer each due to the external funding arrangements. Given the distances and lack of funding it was envisaged that the volunteers would not have significant opportunities to meet as a group.

The agency responsible for the project also had no formal representation in South Africa and relied on two small independent state funded organisations for liaison arrangements. Thus, there was no expected local organisational support.

Four dependent measures were selected to measure the effect of the intervention. The first dependent measure was network density. Network density has been shown to be a significant measure of social network functioning. Low network density has consistently been associated with successful adaptation with reference to significant life events (Simmons, 1994). Network density is also relatively easy to measure.

The second dependent measure was network size. Network size is a relatively insensitive measure with respect to psychological well-being. However, in the current context it was not the absolute size that was being considered but the degree of change in network size. It was hypothesised that for social network builders network size would be an index variable. Although individuals would "need" different numbers of people in their lives they would nevertheless attempt to make up their preferred number. An analogy would be that of the concept of atoms in the physical sciences. Each element has a discrete number of electrons in orbit around the nucleus and that characteristic provides its identity in term of valency. Similarly individuals have variable numbers of other people in their social networks but potentially there maybe a defined and relatively fixed number for each person. The effect of the intervention would be to reduce the existing number of people in the social network. Social network builders would be motivated to re-establish the number of people after the move.

The third dependent measure selected was self-esteem. Self-esteem is an important coping resource for individuals confronted by stressful events, "Resources...reflect a latent dimension of coping because they define a potential for action, but not action itself" (p 266 Gore, 1985). It has been reported that high self-esteem significantly reduces psychological symptoms and can buffer the emotional effects of stressors possibly by the use of problem-focused coping strategies (Menaghan, 1983). It would be reasonable to assume that the volunteer selection process would favour individuals with high self-esteem. As a proxy control for an explanation of social network builders in terms of individual differences, self-esteem should remain the same before and after the intervention. Therefore there should be no difference in self-esteem scores at phases one and four. The construct of self-esteem has been found to be adequately measured by the (Rosenberg, 1965) scale (Gray-Little et al., 1997).

The fourth dependent measure selected was social support. Social support usually refers to informational, instrumental and emotional functions that are provided by

significant others (House et al., 1988). Perceived support appears to be a more salient explanatory construct than received support with respect to mental health (Dunkel-Schetter & Bennett, 1990). Chapters 3 and 4 have discussed in depth the main features of the available measures. Many researchers distinguish between the functional and structural aspects of social support and consider that they are different phenomena (House & Kahn, 1985). Though not often examined concurrently with functional support, the way that an individual's ties to other people are configured does matter with respect to accessing functional support (Lin & Westcott, 1991). Further, having strong or weak ties within a social network has been shown to influence the receipt of functional social support (Wellman & Wortley, 1990). It is also known that received support promotes perceptions of support availability (Wetherington & Kessler, 1986). Thus, it is a reasonable assumption that network structure influences access to received support that in turn precedes the development of perceived support.

In the present study it was considered that disruption to the social network by leaving the United Kingdom (time 1) would result in a reduction in the perceived level of support on the return home (time 3). An explanation for the lowered level of perceived social support could not be attributed to problems with the existing social network. However, the effect of physical relocation would reduce the opportunities for support mobilisation as a reaction to stress. A lower level of perceived social support would be expected if the loss of social network was a factor not only in the access of support but in the maintenance of perceived social support. Subsequently there should be a return to the pre-relocation level of perceived social support after re-establishment of the original social network (time 4). The re-establishment of the social network would also indicate that the individual was able to engage in reciprocal behaviour.

Specific Hypotheses

1. It was hypothesised that there would be a lower social support score, as measured by the ISEL at time 3 for all participants compared to time 1;

2. It was hypothesied that there would be network density would be lower at time 2 as compared to time 1;

3. It was hypothesied that network density would be lower for participants working in PE as compared to those working in JHB given the lower organisational support for participants working in PE than for JHB and hence lack of opportunities for initiating relationships;

4. It was hypothesised that there would be a reduction in network size between time 1 and time 3;

5. It was hypothesised that there would be no significant difference between self-esteem score at time 1 and time 4;

METHOD

Participants

The project was advertised in the national press and by CSV though its own channels, and attracted 150 completed applications. The project specified that applicants should be aged between 16 to 35 years old. The person specification was ambiguous and did not specify any formal qualifications. The projected selected 20 participants following individual interviews. For the purposes of the present study each participant was given an outline of the study process, but not the rationale,

and their consent obtained. All of the 20 participants selected chose to continue with the study. They ranged in age from 19-33 years with the mean being 23.3 years (std.dev. = 3.06 years). 10 of the participants were female (50%). All participants recorded their martial status as single. With respect to birth order 32% were firstborns. The occupational status of the parents was recoded into a class variable using the OPCS (1991) classification. 53% of the participants were coded as class 2 (median = 2). All participants regarded their first language as English. 10 participants recorded that they had prior experience of full time volunteering. Two participants had nursing qualifications. One other participant had a degree in crafts and ceramics. None of the other participants held formal qualifications.

Instruments

The ISEL (Cohen et al., 1985) was used to identify the components of perceived social support as in previous chapters. Network density and size was measured using the procedure reported by (Hirsch, 1979; Hirsch, 1980). Self-esteem was measured using the Rosenberg (1965) self-esteem scale. The GHQ-12 was administered as a screening questionnaire for detecting psychopathology (Goldberg, 1978).

Procedure

The study employed a longitudinal design with four phases (time 1; time 2; time 3 and time 4). The first phase occurred prior to the participants leaving the United Kingdom. In the first phase each participant completed a pack comprised of the ISEL, network size/network density measure, and the self-esteem measure. The second phase was conducted when the participants had been in South Africa for three months. In total participants were in South Africa for four months. In the second phase each participant completed the network size/density measure. The third phase was conducted three months after the participants had returned to the United Kingdom. In the third phase participants completed the ISEL, network

size/ density measure. The fourth phase was conducted a year later. In the fourth phase participants completed the ISEL, network/size density measure, and the self-esteem measure. Over the four phases participants were interviewed at phase one and phase three. Measures were mailed to participants at phases two and four. The phases and content are represented in table 8.1.

The first time that all the participants met each other was on the weekend prior to leaving for South Africa. The weekend was structured as a briefing of all the projects that were to be supported and allocation to projects took place at that time.

On arrival in South Africa all the participants spent two days together prior to being relocated to the projects. The projects varied in their aims and objectives but were essentially charitable organisations. The foci of the local projects varied from supporting street children programmes, agriculturally based programmes, working in homes for older people or children with learning difficulties, supporting homeless people through food aid and night shelters. A commonality among the projects was a low level of local organisation. For example, no job descriptions were available for the volunteers.

Once in South Africa participants were dispersed individually over a large geographical area. For the majority of the participants there were few, if any, opportunities to meet one another during the four months of the project. In the event of medical emergencies contact was made by telephone. There was occasional personal contact by the UK project co-ordinator for routine evaluation and monitoring of the projects. The salient aspect of the study was that the volunteers were placed in situations where they had no pre-existing social network.

The participants spent one day together after returning to the UK before leaving for their home locations. They were advised that a weekend debriefing would occur within three months of their return. The weekend debriefing constituted the

third phase of the present study.

Table 8.1 Study phases and measures given

Phase	1	2	3	4
Time	pre-leaving UK	3months in South Africa	3months back in UK	12months in UK
Content	ISEL, Density, Network Size Self-Esteem	Density,Network Size	ISEL, Density Network Size, Interview	ISEL, Density, Network Size, Self-Esteem

RESULTS

Demographic Results

Table 8.2 Demographic correlations

	1	2	3
1. Age			
2. Sex	-.36		
3. Border	.38	-.22	
4. Class	.53	.11	-.05
N = 19	r > .39 (p < .05)		r > .54 (p < .01)

The demographic correlations are given at table 8.2. The correlations for marital status and first language are not reported since there was no variation in the sample. All respondents reported being single and having English as a first language. The large correlation between age and class indicated that younger participants had parents who were coded with a higher class than older

participants. There was an equal distribution of five male and five female participants in both locations (i.e., East Cape and JHB). On the basis of the GHQ-12 cut off score there were no "cases" identified.

In reporting the following results of the hypotheses stated in the introduction it is important to acknowledge that the numbers in each of the analyses are small because of the small number of participants. Thus, the assumption of a normal distribution has not been made and non-parametric statistics have been employed in the analyses that have been undertaken.

Social Support Results

Cronbach's alphas for the three administrations of the ISEL were: $\alpha_{phase1} = 0.70$; $\alpha_{phase2} = 0.74$; $\alpha_{phase3} = 0.78$. These are acceptable values though at the lower end of reliability values.

The mean ISEL score in phase 1 was 36.2 (std.dev.=3.14); for phase 3 was 33.31 (std.dev.=4.48); for phase 4 was 34.38 (std.dev.=4.48). In order to test the differences between the phases the Wilcoxon matched-pairs signed ranks test was used. The results are presented at table 8. 3.

Table 8.3 ISEL scores by phase

Variable	z score	probability 1-tailed
ISEL 1 - ISEL 3	-2.80	.002
ISEL 1 - ISEL 4	-0.55	.29
ISEL 3 - ISEL 4	-1.51	.13

N=19

Hypothesis 1 was confirmed. There was a decrease in social support experienced by participants as measured by the ISEL between phase 1 and phase 3. The difference was not significant between phase 1 and phase 4 and phase 3 and phase 4. A subsequent analysis covarying out sex did not materially change the results. The finding reflects that after 3 months of returning to the UK participants reported that their level of social support was lower than that prior to leaving for South

Africa. Table 8.4 reports the mean ISEL scores over phases by location and sex.

Table 8.4 Mean values of ISEL over phases by location and sex

	sex		
	male	female	total group
Location			
East Cape			
ISEL 1	37.25	37.20	37.22
ISEL 3	32.00	35.00	33.50
ISEL 4	33.33	38.50	35.40
Johannesburg			
ISEL 1	35.80	34.80	35.30
ISEL 3	33.33	33.00	33.14
ISEL 4	34.33	33.40	33.75

N = 19

Subsequent similar Wilcoxon analyses showed no significant results for the comparisons between location and sex by phase. Inspection of table 8.4 indicates that the mean scores at phase 4 are lower than at phase 1 for all the comparisons except for women who had been located in East Cape. There is no immediate explanation for the latter finding.

Network Density Results

The mean density in phase 1 was 46.63 (std.dev. = 21.47); for phase 2 was 48.91(std.dev. = 12.45); for phase 3 was 45.00 (std.dev. = 27.10); and for phase 4 was 36.62 (std.dev. = 13.28). In order to test the differences between the phases the Wilcoxon matched-pairs signed ranks test was used. The results are presented at table 8.5.

Table 8.5 Network density scores by phase

Variable	z score	probability 1-tailed
Density 1-2	-0.09	.46
Density 1-3	-0.13	.44
Density 1-4	-1.57	.05
Density 2-3	-0.68	.24
Density 2-4	-1.89	.03
Density 3-4	-1.22	.11

N=19

Hypothesis 2 was not confirmed in that there was no significant difference in network density between the phase 1, when participants were in the UK prior to leaving, and in phase 2, after three months of living in South Africa. However, there was a significant difference between phases 1 and 4 representing a time interval of nineteen months. Similarly there was a significant difference between phases 2 and 4 representing a time interval of sixteen months. The differences between phases 1 and 4 compared to phases 2 and 4 are in the same direction. Network density is lower in phase 4 than at phase 1 or phase 2. An interpretation of the difference in network density is that the experience of relocation has effects that are only identifiable in the longer term. The results from examining phase 3 supports the conclusion. There were no significant differences between phase 1 and phase 3; between phase 2 and phase 3; and between phase 3 and phase 4. An explanation for the findings might be that additional events occurred during the twelve months to follow-up that would account for the changes other than the experience of living in South Africa. However, at follow-up none of the participants reported experiencing such a major life event as their stay in South Africa. Thus, the longer term effects explanation is more plausible.

The changes over time in network density as a function of location and sex of the participants are presented in table 8.6. Hypothesis 3 that there would be lower network density for participants working in PE as compared to those working in JHB was not confirmed. Only an indicative explanation of the findings is possible as a consequence of the limited number of participants.

However, there is an interesting trend observable within table 8.6. Contrary to the prediction, the network density of the PE group was higher than that for the JHB group though only for men at phase 2. Network density increased for the PE group as compared to the JHB group who maintained a downward trend at phase 3. The groups separated at phase 4 when the PE returned to a network density commensurate with that in phase 1. At phase 4 the JHB group still had a lower network density than at phase 1. For the women there was no obvious trend for either group through the phases. While it is unreasonable to infer much from the trends other than to acknowledge that there are sex differences that in the way that people structure their social networks when confronted by major life events, nonetheless the men in PE perceived higher density social networks. It could be hypothesised that high density social networks may be health protective for men when confronted by stressful events. The latter hypothesis would warrant further research.

Table 8.6 Mean values of Network density by location and sex

	sex		
	male	female	total group
Location			
East Cape			
Density 1	41.33	43.20	42.50
Density 2	61.50	51.00	54.50
Density 3	77.00	40.67	58.83
Density 4	41.33	41.50	41.40
Johannesburg			
Density 1	44.67	54.40	50.75
Density 2	35.00	44.00	42.20
Density 3	19.50	37.00	31.17
Density 4	26.33	38.00	33.63

N = 19

Network Size Results

Hypothesis 4 hypotheised that there would be a difference in network size between phase 1 and phase 3, with a reduction in network size. The hypothesis

was confirmed. Mean network sizes were at phase 1= 13.41 (std.dev.=3.30); at phase 2 =14.45 (std.dev.=1.51); at phase 3 =10.92 (std.dev.=3.60); and at phase 4 =12.38 (std.dev.=2.93). In order to test the differences between the phases the Wilcoxon matched-pairs signed ranks test was used. The results are presented at table 8.7.

Table 8.7 Network size scores by phase

Variable	z score	probability 1-tailed
Network Size 1-2	-1.26	.10
Network Size 1-3	-1.53	.05
Network Size 1-4	-1.15	.12
Network Size 2-3	-1.82	.03
Network Size 2-4	-2.02	.02
Network Size 3-4	-1.27	.10

N=19

Table 8.8 shows the mean values of network size by location and sex. Network size showed a similar trend found with network density at phases 1 and 3; and phases 2 and 4. However, there was a difference in network size between phases 2 and 3 in the time interval between leaving South Africa and being in the UK for three months. Overall there was a decrease in network size.

Table 8.8 Mean values of Network Size by Location and Sex

	sex		
	male	female	total group
Location			
East Cape			
Network 1	14.25	14.20	14.22
Network 2	12.50	15.00	14.17
Network 3	6.67	13.00	9.83
Network 4	10.00	15.00	12.00
Johannesburg			
Network 1	13.33	12.00	12.50
Network 2	15.00	14.75	14.80
Network 3	12.50	11.75	12.00
Network 4	13.00	12.40	12.63

N=19

Self-esteem results

Hypothesis 5 stated that there would be no significant difference between the self-esteem scores between phases 1 and 4. The hypothesis was confirmed. Cronbach's alphas for the self-esteem scales for the two phases were: α_{phase1} = 0.70 and α_{phase2} = 0.71. These are acceptable reliability values. The difference between the phases tested using the Wilcoxon matched-pairs signed ranks test. The z score = -1.53 with an associated one-tailed probability = 0.07. The mean self-esteem score at phase 1 = 9.05 (std.dev. = 1.08); and at phase 4 = 7.62 (std.dev. = 1.80). While the difference between the two phases is not significant the phase 1 mean was higher than that at phase 4. Although the difference reported is not strictly significant it was nonetheless approaching significance. In order to explore the reasons for this two groups were created based on the location variable, that is, PE and JHB. Using the Wilcoxon matched-pairs signed ranks test there was a significant difference between the two groups. For the PE group the difference between phase 1 and phase 4 reached significance (z = -1.60; p = .05) but not for the JHB group (z = -0.25; p = .39). Thus, the PE group reported more lower self-esteem scores between the two phases than the JHB group. Similar analyses using participant sex as a grouping variable did not show significant results on self-esteem (male z = -0.80; one tailed p = .20; female z = -1.21; one tailed p = .11).

Salient results of the debriefing session at phase 3

Thirteen of the 20 participants attended the debriefing weekend (65%). Five of the participants were in the PE group. Nine of the participants responded that they would wish to volunteer again on the basis of their experience of Project South Africa (69%).

Prior to leaving the UK all participants had been asked at interview if they viewed themselves as giving as much as receiving across a range of activities. All the participants selected regarded themselves as being reciprocal in their relationships.

At the time of the selection interviews it was not possible to give a questionnaire on reciprocity.

On their return at the debriefing weekend it was possible to ask the same question as part of a wider structured interview that all participants engaged in. Eight of the thirteen participants viewed themselves as having been reciprocal during their volunteering experience in South Africa (61%). With respect to the five participants who had been in PE, four stated that they had viewed themselves as having been reciprocal. Interestingly only two of the five participants were part of the group that would wish to volunteer again (40%) as compared to the 69% of the total group.

In response to a question about project organisation there were four clear themes that emerged from the responses from the PE group as compared to the JHB group. The PE group reported that they found moving about stressful; they experienced considerable role ambiguity within their projects; they felt that there was a lack of clarity about who they reported to within their projects; and expressed disappointment with the level of personal supervision/support from the local Project South Africa organisation.

In the final report prepared by Project South Africa these themes were acknowledged to be actual rather than perceptual: "The experience for those in the E Cape differed significantly. There was no attempt by the Steering Committee to bring the volunteers together, despite suggestions that they would arrange joint socials. There appeared to be a concerted effort to keep them apart-it is clear that the Steering Committee disapproved of the consumption of alcohol by the overseas visitors and may have therefore discouraged contact."

Within the context of the debriefing weekend the experience of the PE group was perceived as qualitatively different from that of participants who worked within JHB.

Relationships between Network density, size and social support measures

The number of participants in the study precluded the use of parametric correlational methods. However, spearman rank correlation coefficients (r_s) were calculated for each of the three phases (phases 1, 3 & 4) when both network variables and social support were measured. Though no significant correlations between the measures were found, at phase 4 the spearman rank correlation coefficient between social support as measured by ISEL and Network density approached significance ($r_s = -.49$; $n = 13$; $p < .09$; two-tailed).

DISCUSSION

The present study examined the effect of a significant physical relocation on both social network variables and social support using a longitudinal design. The presence of strong network ties has been hypothesised as a precursor factor in the development of a link between received and perceived support. The absence of even a low correlation between measures taken concurrently during phases 1, 3 & 4 suggests that the effect of relocation operates independently on the structural and functional aspects of social support. However, an alternative explanation is that the independence is shown only because the individuals are not in a stressful situation. Unfortunately ISEL data could not be collected for phase 2 when participants were in South Africa. The available data on network density and size show that while not statistically significant there was a discernible effect during phase 2.

The median value for network density for phase 2 (53) is qualitatively different from the three values for phases 1, 3 & 4 (38; 34; 32). Given that network size remained constant, and these network members were "new" to the participant's social network, suggests that participants perceived more relations between their

network members in South Africa than in the United Kingdom. The significance of the finding is that high density networks are associated with emotionally and informational supportive situations compared to low density networks that are found when individuals are experiencing transition. The perception of high density networks was an adaptive strategy for situations when confronted by a stressful situation. Further, since none of the participants were repatriated before the agreed return date as a consequence of being placed in South Africa, it suggests that they were able to cope with the stressful situation that they found themselves in. That the experience was stressful was reported in the debriefing weekend, supported specifically by those who were located in PE who also indicated that they would not consider volunteering in the future.

An interesting finding is that the experience of relocation may have effects on social network variables are only detectable some time after the experience. The hypothesis that network density would be lower in South Africa, predicted on the basis that the participants would be in transition and have less developed social networks, was not confirmed. In contrast the participants had re-established a social network albeit with a higher density. Comparing the results of phase 1 & 2 with phase 4 suggests that lower density is a longer term outcome of the relocation event. The latter finding is qualified by the fact that there is no one year pre-move data available, although it is likely that phase 1 is a representative value of network density given that participants were within stable social networks prior to the move to South Africa. The implications of the finding is that social network effects of relocation are likely to be manifest after a year of the return to the home environment. A common criticism of social network analysis is that it has a "static" bias, in that it describes a point in time rather than providing an explanation for the "stream" of social behaviour. In the present study the longitudinal "snapshots" of social network variables indicate that network density does vary with social behaviour in specific ways. The present results indicate that high network density may signal adaptation to stressful relocation and change individual disposition to low density networks after the stressor is no longer

operating.

The findings suggest that the ability to mobilise network functional resources is a secondary activity given that there needs to be a network structure in place. Traditional theories of social support mobilisation have taken an *a priori* approach that the social structure is both in place and comparable across individuals. The present study found that social networks can be established by people who are successfully coping in a stressful situation, but that the structural characteristics index the stage of coping rather than being a fixed attribute. Thus, the measurement of social support and social structure may covary as a function of coping to stressful events. The simple distinction between the direct and buffering effects of social support as commonly discussed in the literature does not allow theoretical analysis of potential co-variation as described. The concept of reciprocity enhances the theoretical analysis by providing a linkage between direct and buffering effects. Social network builders engage in high levels of reciprocal behaviour in order to establish social networks. When confronted by perceived stressful events they are able to access support resources from the network. The implication is that engaging in reciprocal behaviour represents an active problem focused coping response as opposed to a passive emotion focused response to a stressor.

One major difficulty with the present study is that there is a potential confusion in the nature of the stressor. Stress has typically been investigated in three major forms: significant life events, chronic strains and daily hassles. In the present study no distinction was made between the three forms. It may be that there are differential effects on social network variables by the three forms. For example, a significant life event change may be the most detectable in the social network characteristics but not in established social networks when considering daily hassles. Some support for this position is given by the findings in the marital discord literature (Acock & Hurlbert, 1993). The limitation, however, does not detract from the indicative value of the demonstration that social network

variables are precursors of the development of perceived social support found in the present study.

A second limitation is that the volunteer selection process would be biased to those individuals having the prerequisite coping skills and therefore not be a representative sample of the general population. The lack of psychopathology as detected by the GHQ, the ability to cope with the presence of language barriers, the lack of adequate supervision, role ambiguity, transport problems, poor domestic arrangements, low skill matching to project expectations, stressful contact with the clients using the projects, an uncertain political context and the fact that no volunteer was repatriated early, would suggest that the sample did have adequate coping skills. However, the representativeness required in the present study was not on the basis of their coping skills but on their social network characteristics. The initial social network characteristics were representative of general populations. Further the presence of these coping skills acting potentially as an independent variable allows for the interpretation of social network characteristics as the dependent variable in the relocation process.

A further limitation in respect of the examination of reciprocity as an explanatory construct in the linkage between functional and structural aspects of social support is the absence of direct reciprocity measurement. However, both the effects on network size obtained in the present study and the self-reported experiences are indicative that social network builders do engage in reciprocal behaviour. A further prospective study is warranted that specifies in more detail the nature of the stressor and includes the constructed measure of reciprocity developed in the present thesis.

In summary, the present study provides indicative support for the thesis that social network characteristics can be used to index the effects of relocation on perceived social support. Additional research into the covariation between social network development and perceived social support is required in order to determine the role

of reciprocity in that linkage.

Chapter 9 Overall conclusions concerning a theory for, and measurement of reciprocity

Summary conclusions by chapter

Chapter 1 introduced the concept of generalised reciprocity. Generalised reciprocity occurs when a favour is given with only a general expectation that the favour will be returned in the future. No direct exchange or attempt to 'get something for nothing' (negative reciprocity) is implied. Equity theory and social exchange theory are predicated on generalised reciprocity. However, a measure of generalised reciprocity was not available in the psychological literature.

Chapter 2 and chapter 3 considered available social support measures and used them to define the dimensions for a reciprocity measure. It was shown that all these social support measures were measuring received support. The perceived values of the items was different for received and given favours therefore it was not appropriate to reverse the item wording to create a measure of reciprocity.

In order to systematically evaluate existing reciprocity measures an index was created comprised of five criteria. At a minimum a measure of reciprocity should:

1. comprise at least two dimensions of support;
2. have more than two items per dimension;
3. have adequate psychometric properties (internal reliability);
4. have a clear factor structure; and
5. be correlated with other measures of reciprocity (concurrent and construct validity).

Using the index it was shown that no reciprocity measure reported in the literature met the five criteria. A reciprocity measure was developed using three dimensions in order to generate the original list of favours. These dimensions were labelled

instrumentality, sociality and guidance. The distinction between relationship specific and global perceptions of social support was extended to generalised reciprocity.

Chapter 4 focused on equity theory. Equity theory assumes that individuals strive for balanced social exchanges. The data reported in chapter 4 indicated that if favours in the social exchange could be accurately costed, e.g., favours that were easily translated to a monetary value, then equity theory could account for the findings. However, two consistent cognitive biases were found for favours that had an indeterminate monetary value and could not be easily interpretable by equity theory. One cognitive bias observed was that of valuing received favours higher than favours given. The theoretical significance of such a bias is that if reciprocity was construed as a difference score, then aside from the calculation problems, there would rarely be a balance between giving and receiving.

The second cognitive bias was to report higher frequencies of giving than receiving. Inspection of the data showed that although, not unsurprisingly, the lowest value favours were more frequently given, it was the perception that they were given that maintained reciprocal relationships. The latter finding accords with the notion of generalised reciprocity. Clearly not everyone can be a net giver, hence the notion is one of perceived giving

The net effect of these two cognitive biases leads to adaptive social behaviour. In order to maintain social exchanges there is a need to maintain indebtedness. Given that there will never be a perception of balance then indebtedness will be the norm. These two cognitive biases also do not require the cognitive balancing mechanism assumed by equity theory. Greater parsimony is achieved by not having balancing mechanism. A balancing mechanism requires that individuals commit considerable memory capacity and facility in maintaining a log of not only favours given and received, but also by value and type across all the potential relationships. An alternative simpler cognitive accounting system could account

for the same outcomes but by considering only perceived relationships. It is important to maintain the distinctions between generalised reciprocity, direct exchange, and negative reciprocity.

Chapter 5 considered the interaction between type of relationship and reciprocity. The distinction between communal (kin related) and exchange relations (non-kin) was used to consider a third cognitive bias in reciprocity. The cognitive bias was that in communal relations there would be a perceived balance given the stability of the social network. Thus, there would be fewer but larger value interactions between kin than with individuals in exchange relations. In exchange relations there would be a higher frequency of interactions and a greater perceived imbalance.

Chapter 5 also considered the possibility that there was a decoupling between the processes of giving and receiving. Individuals striving to maintain balanced relations, because of incapacity, then overvaluing received resources would compensate for the cognitive bias of lower values for giving. In these circumstances the cognitive bias could be conceived as an individual difference variable.

Social exchange theory assumes that there is an external referent that allows the ratio between inputs and outputs to be judged. A more parsimonious explanation would be to assume that the give values of resources are valued as lower than the receive values. A balanced relationship would then not be when A(r)value = B(r)value but when A(g)/B(r) = B(g)/A(r). Where A(r) is the value of resource A when received; A(g) the values of resource A when given; B(r) the value of resource B when received; and B(g) the value of resource B when given.

A(g)/B(r) = B(g)/A(r) is a term that represents two internal representation rather than the A(r)value = B(r)value that relies on an external reference point. For communal relations the relative internal values would be similar. For exchange relations there would be a predisposition to have asymmetric values and hence not

maintain an equilibrium.

Until chapter 6 the reciprocity measure had used value and frequency scaling. An alternative scaling method was used and led to enhanced psychometric properties. The scale was change to an agree/disagree format prefaced by the two statements "There are people in my life who count on me / I count on to:".

In chapter 6 the relationship between the provider and the receiver was further examined. A fourth cognitive bias was seen as a function of age. Individuals aged over 75 who perceived themselves as overall givers of support maintained their beliefs about their own capabilities whereas those who perceived themselves as overall receivers of support sustained a beneficent world view. A further assumption within equity theory, other than the memory capacity for events, is that individuals remember more positive instances of support provision. Unfortunately the evidence is that individuals are more likely to remember instances when support was not made available.

The cognitive mechanism proposed in chapter 6 was a schema that incorporates not only people on whom an individual is dependent but also those who are dependent on the individual. There was a positive correlation with both social network density and size with the reciprocity measure. In contrast although the ISEL, a measure of perceived social support, was correlated to the reciprocity measure, it was not correlated to either network density or size. The reciprocity measure was also sensitive to structural variables.

Chapter 7 undertook a confirmatory factor analysis of the reciprocity measure and reported on the criterion validity by correlation with the IPRI. Measurement of reciprocity was undertaken as two scores rather than one difference score as in previous studies.

In chapter 8 the structural variable of social network size was found to vary as a function of significant physical relocation. The participants in the study were able to re-establish social networks in a new physical location within a short timespan. The finding was taken as evidence to support the hypothesis that structural variables are significant when considering reciprocity.

Towards a theory of reciprocity

Any given theory should be able to account for observable phenomena with a minimum set of assumptions and also make predictions that can be tested. The current observable phenomena are the cognitive biases that have been identified with respect to the giving and receiving of favours.

For equity theory, the basic tenets of minimising costs and maximising outcomes, make sense only if there is a constant value for the favours that are being exchanged. The condition is best met for favours that have an agreed monetary value. The *instrumentality* factor was an example of favours that have relatively constant value across individuals. In many instances, however, the value attributed to the favour varies considerably. In particular, favours have been shown to vary as a function of the frequency of giving and receiving.

Therefore, equity theory requires a further mechanism, other than the basic balancing mechanism, to equate variable values of the cost of giving and receiving. Such a process, in addition to the storage required to maintain a log of the exchanges undertaken with other individuals, becomes increasing difficult to conceptualise. While the present thesis is unable to account for the origin of the cognitive biases it nonetheless has demonstrated their existence and can place them into a context.

The present theory of reciprocity theory proposes that individuals maintain a cognitive schema of individuals in their networks. The cognitive schema acts as a

map of the bidirectional relationships that exist in the social network. These relationships can be measured as social network variables (e.g., network density or network size). The theory is relationship specific in that individuals within the schema have defined favour exchange relations.

The measurement of generalised reciprocity

The developed measure of reciprocity fulfils all five minimum requirements that were set in chapter 2.

The measure has two dimensions, those of sociality and guidance. There are more than two items on the measure and adequate psychometric properties have been demonstrated. The measure has a clear factor structure and correlates with another measure of reciprocity. The measure was shown not to be subject to demand bias as shown by the lack of correlation with the Marlowe-Crowne scale.

A critical feature of the reciprocity measure is that it has very high Cronbach alphas for both the receive and give scale. Therefore if difference measures are deemed to be conceptually appropriate it is possible to use the measure.

The technical properties of the reciprocity measure have been examined. The measure varies with the index variables as a function of the method of calculation. The recommended calculation is to use a multiplicative procedure. In some research areas it may be appropriate to use the two scores independently and place them in a regression equation.

Three key functions attributed to reciprocity

1.Social ties create non-random social networks. Generalised reciprocity provides a method of creating these social networks (Wellman, 1988).

The simultaneous operation of the first two cognitive biases would create the linkage necessary for social network building. When a favour is received it is perceived as having a higher value than when it is given. Therefore there is an inherent imbalance such that the return favour cannot be accurately gauged, and even if it were, it would still be perceived as having a greater value than the original favour. Coupled with the belief that there is a higher frequency of giving than receiving favours, there will be an expectation that favours are still outstanding. As a consequence individuals will maintain asymmetric social ties.

2. Generalised reciprocity is assumed to be responsible for maintaining social ties, therefore one prediction is that it should correlate with social network variables (Antonucci & Jackson, 1990).

In contrast to the ISEL that has not been shown to correlate with network size, the reciprocity measure correlates with network size (Table 6.11). The reciprocity measure has both functional and structural characteristics.

3.. In high density social networks giving and receiving have a closer relationship than in in low density social networks (Yan, 1996).

The present measure has a differential relationship with high and low density social networks. In high density networks information and other forms of support flow easily and are likely to occur when social networks need to be mobilised in times of crisis or change. Low density networks are more likely to occur when

individuals are in transition. In the latter networks it would be hypothesised that there would be a higher proportion of direct exchange relationships than generalised reciprocal relationships. Evidence for the findings is given in Tables 4.14 and 6.7.

Future research areas

Three further areas can be identified as requiring additional investigation. Firstly, the reciprocity measure requires further research on its validity. The present population, while consistent over the studies with respect to demographic characteristics, is restricted. The primary experimental method used has been the use of factor analysis. Using different populations and other experimental designs (e.g., ANOVA) would provide additional validity information. For example, an experiment could be conducted that used the reciprocity measure to define three groups, high, medium and low reciprocators. An experimental task could be designed to assess cooperation with others on a predetermined task. One hypothesis would be that team players are high reciprocators. The discriminant ability would be evidence for the validity of the reciprocity measure.

Secondly, the distinction between generalised reciprocity, direct exchange and negative reciprocity requires further research. The data presented in the present thesis does not allow for an examination of direct exchange. For example, what are the consequences of engaging only in direct exchange with respect to social network development? Are the effects of generalised reciprocity and direct exchange differently perceived at the emotional level? These questions cannot be currently answered though there is now a measure that can be used to assess generalised reciprocity.

Thirdly, the utility of the theory of reciprocity requires further research. For example, in the older adult literature there is a significant correlation between

helping and self-esteem (Wentowski, 1981). While the perception of older adults is that they are a needy group: "a handicapped population dangling at the end of the life span" (Ehrlich, 1979), studies of older adults living in community settings report that they provide more help than they receive (e.g., Kahana & Felton, 1977). Thus, the ability to reciprocate can be construed as a coping mechanism for individuals who are requiring help. Further development of reciprocity theory and its connection with self-esteem is needed. Ultimately clinical interventions, and their evaluation, based on reciprocity theory may also be undertaken through the use of single case designs.

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Appendix 1: Factor analysis of the ISEL- Chapter 3

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
EL1	1.00000	*	1	6.49631	16.2	16.2
EL2	1.00000	*	2	2.61802	6.5	22.8
EL3	1.00000	*	3	2.34255	5.9	28.6
EL4	1.00000	*	4	1.99036	5.0	33.6
EL5	1.00000	*	5	1.87604	4.7	38.3
EL6	1.00000	*	6	1.67295	4.2	42.5
EL7	1.00000	*	7	1.53905	3.8	46.3
EL8	1.00000	*	8	1.44473	3.6	50.0
EL9	1.00000	*	9	1.39729	3.5	53.4
EL10	1.00000	*	10	1.25512	3.1	56.6
EL11	1.00000	*	11	1.20295	3.0	59.6
EL12	1.00000	*	12	1.12655	2.8	62.4
EL13	1.00000	*	13	1.05914	2.6	65.1
EL14	1.00000	*	14	.97992	2.4	67.5
EL15	1.00000	*	15	.93660	2.3	69.8
EL16	1.00000	*	16	.92012	2.3	72.1
EL17	1.00000	*	17	.85988	2.1	74.3
EL18	1.00000	*	18	.82371	2.1	76.4
EL19	1.00000	*	19	.76689	1.9	78.3
EL20	1.00000	*	20	.73436	1.8	80.1
EL21	1.00000	*	21	.67840	1.7	81.8
EL22	1.00000	*	22	.66249	1.7	83.5
EL23	1.00000	*	23	.63717	1.6	85.1
EL24	1.00000	*	24	.59547	1.5	86.5
EL25	1.00000	*	25	.55919	1.4	87.9
EL26	1.00000	*	26	.55303	1.4	89.3
EL27	1.00000	*	27	.51086	1.3	90.6
EL28	1.00000	*	28	.44860	1.1	91.7
EL29	1.00000	*	29	.43267	1.1	92.8
EL30	1.00000	*	30	.36019	.9	93.7
EL31	1.00000	*	31	.33918	.8	94.5
EL32	1.00000	*	32	.32753	.8	95.4
EL33	1.00000	*	33	.31577	.8	96.2
EL34	1.00000	*	34	.29523	.7	96.9
EL35	1.00000	*	35	.25322	.6	97.5
EL36	1.00000	*	36	.24641	.6	98.1
EL37	1.00000	*	37	.23973	.6	98.7
EL38	1.00000	*	38	.19746	.5	99.2
EL39	1.00000	*	39	.15743	.4	99.6
EL40	1.00000	*	40	.14743	.4	100.0

PC extracted 4 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 21 iterations.

Rotated Factor Matrix:

	Factor 1	Factor 2	Factor 3	Factor 4
EL1				
EL2	.41938			
EL3	.57046			
EL4		.52670		
EL5	.61863		.31260	
EL6				
EL7			.60444	
EL8			.58374	
EL9	.55211	.40498		
EL10		.38143		
EL11	.33208			.48087
EL12			.57478	
EL13	.34218	.32090		
EL14		.60613		
EL15	.47254	.46809		
EL16		.60611		
EL17				.39377
EL18	.56586			
EL19	.32963	.34073	.34950	
EL20	.31611	.46093		
EL21				
EL22	.46311			
EL23		.46014		
EL24		.68732		
EL25	.53094			.34923
EL26				.48561
EL27	.30343	.35349	.31164	
EL28	.44495			
EL29	.41325			
EL30	.40865		-.38384	
EL31	.41430	.32384		
EL32				.41807
EL33				.55285
EL34				.68785
EL35				.40546
EL36	.42603		.47692	
EL37				
EL38		.34182	.36820	.32965
EL39	.56569			
EL40		.52850		

Appendix 2: Factor analysis of the ISSB- Chapter 3

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
IB1	1.00000	*	1	10.92421	27.3	27.3
IB2	1.00000	*	2	3.11695	7.8	35.1
IB3	1.00000	*	3	2.57395	6.4	41.5
IB4	1.00000	*	4	1.86115	4.7	46.2
IB5	1.00000	*	5	1.59164	4.0	50.2
IB6	1.00000	*	6	1.45501	3.6	53.8
IB7	1.00000	*	7	1.37203	3.4	57.2
IB8	1.00000	*	8	1.29818	3.2	60.5
IB9	1.00000	*	9	1.19150	3.0	63.5
IB10	1.00000	*	10	1.12747	2.8	66.3
IB11	1.00000	*	11	1.00138	2.5	68.8
IB12	1.00000	*	12	.92213	2.3	71.1
IB13	1.00000	*	13	.88578	2.2	73.3
IB14	1.00000	*	14	.82388	2.1	75.4
IB15	1.00000	*	15	.77746	1.9	77.3
IB16	1.00000	*	16	.71665	1.8	79.1
IB17	1.00000	*	17	.68154	1.7	80.8
IB18	1.00000	*	18	.64028	1.6	82.4
IB19	1.00000	*	19	.61288	1.5	83.9
IB20	1.00000	*	20	.60248	1.5	85.4
IB21	1.00000	*	21	.55472	1.4	86.8
IB22	1.00000	*	22	.49456	1.2	88.1
IB23	1.00000	*	23	.46949	1.2	89.2
IB24	1.00000	*	24	.41409	1.0	90.3
IB25	1.00000	*	25	.40975	1.0	91.3
IB26	1.00000	*	26	.36788	.9	92.2
IB27	1.00000	*	27	.35415	.9	93.1
IB28	1.00000	*	28	.31268	.8	93.9
IB29	1.00000	*	29	.30366	.8	94.6
IB30	1.00000	*	30	.28568	.7	95.4
IB31	1.00000	*	31	.27466	.7	96.0
IB32	1.00000	*	32	.24586	.6	96.7
IB33	1.00000	*	33	.22616	.6	97.2
IB34	1.00000	*	34	.20882	.5	97.7
IB35	1.00000	*	35	.18618	.5	98.2
IB36	1.00000	*	36	.17914	.4	98.7
IB37	1.00000	*	37	.16280	.4	99.1
IB38	1.00000	*	38	.14588	.4	99.4
IB39	1.00000	*	39	.12156	.3	99.7
IB40	1.00000	*	40	.10575	.3	100.0

PC extracted 3 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 8 iterations.

Rotated Factor Matrix:

	Factor 1	Factor 2	Factor 3
IB1			
IB2		.53061	
IB3		.50354	
IB4			.41419
IB5	.67188		
IB6	.45864	.49612	
IB7	.51345		
IB8	.51754		
IB9	.44456		.35516
IB10	.30188	.62178	
IB11		.70887	
IB12	.45504	.62311	
IB13	.50974	.31541	
IB14	.42984	.54188	
IB15	.65943		
IB16	.64579		
IB17			.64530
IB18		.61473	
IB19	.54253	.33969	
IB20			.65814
IB21	.41347		.41680
IB22			.75921
IB23	.55137		.35915
IB24	.34020	.65113	
IB25	.39962		.30535
IB26	.45805	.36031	
IB27	.65537		
IB28	.57452		
IB29		.73611	
IB30		.67645	
IB31		.77935	
IB32	.49300		.31657
IB33	.31380	.32398	
IB34			.57229
IB35	.54297		
IB36	.37786		
IB37		.59517	
IB38		.45516	.43714
IB39	.54288		
IB40			.52230

Appendix 3: Factor analysis of the SSQ(N) - Chapter 3

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
SN1	1.00000	*	1	15.57552	57.7	57.7
SN2	1.00000	*	2	1.32103	4.9	62.6
SN3	1.00000	*	3	1.11717	4.1	66.7
SN4	1.00000	*	4	1.03229	3.8	70.5
SN5	1.00000	*	5	.91870	3.4	73.9
SN6	1.00000	*	6	.66687	2.5	76.4
SN7	1.00000	*	7	.63007	2.3	78.7
SN8	1.00000	*	8	.52821	2.0	80.7
SN9	1.00000	*	9	.50703	1.9	82.6
SN10	1.00000	*	10	.48860	1.8	84.4
SN11	1.00000	*	11	.45318	1.7	86.1
SN12	1.00000	*	12	.40699	1.5	87.6
SN13	1.00000	*	13	.38656	1.4	89.0
SN14	1.00000	*	14	.34504	1.3	90.3
SN15	1.00000	*	15	.32315	1.2	91.5
SN16	1.00000	*	16	.29233	1.1	92.6
SN17	1.00000	*	17	.25846	1.0	93.5
SN18	1.00000	*	18	.25443	.9	94.5
SN19	1.00000	*	19	.23977	.9	95.4
SN20	1.00000	*	20	.22191	.8	96.2
SN21	1.00000	*	21	.21247	.8	97.0
SN22	1.00000	*	22	.18199	.7	97.6
SN23	1.00000	*	23	.16075	.6	98.2
SN24	1.00000	*	24	.14076	.5	98.8
SN25	1.00000	*	25	.12903	.5	99.2
SN26	1.00000	*	26	.10746	.4	99.6
SN27	1.00000	*	27	.10023	.4	100.0

PC extracted 1 factors.

Factor Matrix:

	Factor 1
SN1	.64430
SN2	.69681
SN3	.70395
SN4	.71075
SN5	.81306
SN6	.67363
SN7	.83014
SN8	.79115
SN9	.83356
SN10	.74584
SN11	.65008
SN12	.78699
SN13	.80313
SN14	.67691
SN15	.76229
SN16	.72070
SN17	.82791
SN18	.73613
SN19	.76663
SN20	.87007
SN21	.80910
SN22	.76532
SN23	.82075
SN24	.64459
SN25	.83497
SN26	.77955
SN27	.73557

Final Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
SN1	.41513	*	1	15.57552	57.7	57.7
SN2	.48555	*				
SN3	.49554	*				
SN4	.50516	*				
SN5	.66107	*				
SN6	.45377	*				
SN7	.68913	*				
SN8	.62592	*				
SN9	.69482	*				
SN10	.55628	*				
SN11	.42260	*				
SN12	.61936	*				
SN13	.64501	*				
SN14	.45820	*				
SN15	.58109	*				
SN16	.51940	*				
SN17	.68543	*				
SN18	.54189	*				
SN19	.58772	*				
SN20	.75703	*				
SN21	.65464	*				
SN22	.58571	*				
SN23	.67362	*				
SN24	.41549	*				
SN25	.69718	*				
SN26	.60770	*				
SN27	.54106	*				

OBLIMIN rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

>Warning # 11310
>Only one factor was extracted. The solution cannot be rotated.

Appendix 4: Factor analysis of the SSQ(Q)- Chapter 3

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
SQ1	1.00000	*	1	12.93960	47.9	47.9
SQ2	1.00000	*	2	1.78116	6.6	54.5
SQ3	1.00000	*	3	1.34846	5.0	59.5
SQ4	1.00000	*	4	1.29640	4.8	64.3
SQ5	1.00000	*	5	1.20693	4.5	68.8
SQ6	1.00000	*	6	.96887	3.6	72.4
SQ7	1.00000	*	7	.95044	3.5	75.9
SQ8	1.00000	*	8	.80144	3.0	78.9
SQ9	1.00000	*	9	.66263	2.5	81.3
SQ10	1.00000	*	10	.63848	2.4	83.7
SQ11	1.00000	*	11	.57185	2.1	85.8
SQ12	1.00000	*	12	.49709	1.8	87.6
SQ13	1.00000	*	13	.42059	1.6	89.2
SQ14	1.00000	*	14	.40242	1.5	90.7
SQ15	1.00000	*	15	.33693	1.2	91.9
SQ16	1.00000	*	16	.31838	1.2	93.1
SQ17	1.00000	*	17	.28674	1.1	94.2
SQ18	1.00000	*	18	.25029	.9	95.1
SQ19	1.00000	*	19	.23976	.9	96.0
SQ20	1.00000	*	20	.22634	.8	96.8
SQ21	1.00000	*	21	.18437	.7	97.5
SQ22	1.00000	*	22	.15332	.6	98.1
SQ23	1.00000	*	23	.13618	.5	98.6
SQ24	1.00000	*	24	.11390	.4	99.0
SQ25	1.00000	*	25	.09715	.4	99.4
SQ26	1.00000	*	26	.09307	.3	99.7
SQ27	1.00000	*	27	.07720	.3	100.0

PC extracted 1 factors.

Factor Matrix:

	Factor 1
SQ1	.43814
SQ2	.48974
SQ3	.68921
SQ4	.52345
SQ5	.81377
SQ6	.50890
SQ7	.72829
SQ8	.58075
SQ9	.77183
SQ10	.73095
SQ11	.69702
SQ12	.79740
SQ13	.75874
SQ14	.54468
SQ15	.74739
SQ16	.77099
SQ17	.70246
SQ18	.77854
SQ19	.79365
SQ20	.76541
SQ21	.74832
SQ22	.66934
SQ23	.75783
SQ24	.60825
SQ25	.74395
SQ26	.61428
SQ27	.70316

Final Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
SQ1	.19197	*	1	12.93960	47.9	47.9
SQ2	.23985	*				
SQ3	.47501	*				
SQ4	.27400	*				
SQ5	.66221	*				
SQ6	.25898	*				
SQ7	.53041	*				
SQ8	.33727	*				
SQ9	.59572	*				
SQ10	.53428	*				
SQ11	.48584	*				
SQ12	.63585	*				
SQ13	.57569	*				
SQ14	.29668	*				
SQ15	.55859	*				
SQ16	.59442	*				
SQ17	.49346	*				
SQ18	.60613	*				
SQ19	.62989	*				
SQ20	.58585	*				
SQ21	.55998	*				
SQ22	.44802	*				
SQ23	.57431	*				
SQ24	.36997	*				
SQ25	.55346	*				
SQ26	.37735	*				
SQ27	.49443	*				

OBLIMIN rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

>Warning # 11310
>Only one factor was extracted. The solution cannot be rotated.

Appendix 5: Factor analysis of the IEES- Chapter 3

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
IE1	1.00000	*	1	6.27878	24.1	24.1
IE2	1.00000	*	2	2.52245	9.7	33.9
IE3	1.00000	*	3	2.32183	8.9	42.8
IE4	1.00000	*	4	1.79065	6.9	49.7
IE5	1.00000	*	5	1.58565	6.1	55.8
IE6	1.00000	*	6	1.46990	5.7	61.4
IE7	1.00000	*	7	1.10263	4.2	65.7
IE8	1.00000	*	8	1.02173	3.9	69.6
IE9	1.00000	*	9	.86971	3.3	72.9
IE10	1.00000	*	10	.81383	3.1	76.1
IE11	1.00000	*	11	.70428	2.7	78.8
IE12	1.00000	*	12	.67318	2.6	81.4
IE13	1.00000	*	13	.63485	2.4	83.8
IE14	1.00000	*	14	.56114	2.2	86.0
IE15	1.00000	*	15	.50207	1.9	87.9
IE16	1.00000	*	16	.46553	1.8	89.7
IE17	1.00000	*	17	.41734	1.6	91.3
IE18	1.00000	*	18	.38740	1.5	92.8
IE19	1.00000	*	19	.35061	1.3	94.1
IE20	1.00000	*	20	.31394	1.2	95.3
IE21	1.00000	*	21	.29285	1.1	96.5
IE22	1.00000	*	22	.24691	.9	97.4
IE23	1.00000	*	23	.22172	.9	98.3
IE24	1.00000	*	24	.19405	.7	99.0
IE25	1.00000	*	25	.15222	.6	99.6
IE26	1.00000	*	26	.10476	.4	100.0

PC extracted 5 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 10 iterations.

Rotated Factor Matrix:

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
IE1		.42382			-.43667
IE2	.74808			.37173	
IE3				.74457	
IE4	.72168			.30340	
IE5				.53919	
IE6	.36067				-.36364
IE7	.45102			.49463	
IE8		.61304			
IE9		.58957			
IE10	.63015				.38692
IE11				.49106	
IE12		.76792			
IE13			.67813		
IE14			.66975		
IE15	.53368				
IE16		.74722			
IE17	.33066		.52710		
IE18	.72911				
IE19			.61431	.42962	
IE20	.78803				
IE21	.70174				
IE22	.32313		.57241		
IE23			.44748	.41802	
IE24	.68548	.37798			.33775
IE25					.78310
IE26					.71314

Appendix 6: Factor analysis of the ISEL- Chapter 4

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
ISEL1	1.00000	*	1	8.15498	20.4	20.4
ISEL2	1.00000	*	2	2.33313	5.8	26.2
ISEL3	1.00000	*	3	2.04154	5.1	31.3
ISEL4	1.00000	*	4	1.87875	4.7	36.0
ISEL5	1.00000	*	5	1.76277	4.4	40.4
ISEL6	1.00000	*	6	1.49972	3.7	44.2
ISEL7	1.00000	*	7	1.34007	3.4	47.5
ISEL8	1.00000	*	8	1.33821	3.3	50.9
ISEL9	1.00000	*	9	1.24507	3.1	54.0
ISEL10	1.00000	*	10	1.14174	2.9	56.8
ISEL11	1.00000	*	11	1.09974	2.7	59.6
ISEL12	1.00000	*	12	1.05705	2.6	62.2
ISEL13	1.00000	*	13	1.02100	2.6	64.8
ISEL14	1.00000	*	14	.97236	2.4	67.2
ISEL15	1.00000	*	15	.88812	2.2	69.4
ISEL16	1.00000	*	16	.85667	2.1	71.6
ISEL17	1.00000	*	17	.81668	2.0	73.6
ISEL18	1.00000	*	18	.79661	2.0	75.6
ISEL19	1.00000	*	19	.77718	1.9	77.6
ISEL20	1.00000	*	20	.73794	1.8	79.4
ISEL21	1.00000	*	21	.69887	1.7	81.1
ISEL22	1.00000	*	22	.67006	1.7	82.8
ISEL23	1.00000	*	23	.65625	1.6	84.5
ISEL24	1.00000	*	24	.62869	1.6	86.0
ISEL25	1.00000	*	25	.53567	1.3	87.4
ISEL26	1.00000	*	26	.52550	1.3	88.7
ISEL27	1.00000	*	27	.49704	1.2	89.9
ISEL28	1.00000	*	28	.46738	1.2	91.1
ISEL29	1.00000	*	29	.45297	1.1	92.2
ISEL30	1.00000	*	30	.41967	1.0	93.3
ISEL31	1.00000	*	31	.37112	.9	94.2
ISEL32	1.00000	*	32	.35269	.9	95.1
ISEL33	1.00000	*	33	.32401	.8	95.9
ISEL34	1.00000	*	34	.31488	.8	96.7
ISEL35	1.00000	*	35	.29265	.7	97.4
ISEL36	1.00000	*	36	.27961	.7	98.1
ISEL37	1.00000	*	37	.22132	.6	98.7
ISEL38	1.00000	*	38	.20029	.5	99.2
ISEL39	1.00000	*	39	.17128	.4	99.6
ISEL40	1.00000	*	40	.16068	.4	100.0

PC extracted 4 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 8 iterations.

Rotated Factor Matrix:

	Factor 1	Factor 2	Factor 3	Factor 4
ISEL1		.43864		
ISEL2		.35423		
ISEL3	.49524		.34732	
ISEL4	.53175			
ISEL5	.64811			
ISEL6	.38316			
ISEL7	.45476			.34894
ISEL8				.37541
ISEL9				.53005
ISEL10	.38809	.32765		
ISEL11		.61189	.37202	
ISEL12	.45292			
ISEL13	.39728		.36746	
ISEL14				-.33133
ISEL15			.76158	
ISEL16	.61074			
ISEL17	.39928	.37580		
ISEL18				.35211
ISEL19		.38496	.54918	
ISEL20			.65477	
ISEL21				.55848
ISEL22	.61278	.30835		
ISEL23	.46867			
ISEL24	.34521	.33169	.33494	
ISEL25			.43058	
ISEL26		.60383		
ISEL27		.43370		
ISEL28	.37949			.31731
ISEL29				.49344
ISEL30				.39110
ISEL31			.30200	.47548
ISEL32		.72279		
ISEL33		.53591		.34010
ISEL34	.30301	.58895		
ISEL35		.55875	.38106	
ISEL36				.52087
ISEL37			.68688	
ISEL38	.50325			.49095
ISEL39			.30185	.38695
ISEL40	.32448		.31060	

Appendix 7: Factor analysis of the ISSB- Chapter 4

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
IB1	1.00000	*	1	11.96469	29.9	29.9
IB2	1.00000	*	2	2.69826	6.7	36.7
IB3	1.00000	*	3	2.27185	5.7	42.3
IB4	1.00000	*	4	1.65230	4.1	46.5
IB5	1.00000	*	5	1.57312	3.9	50.4
IB6	1.00000	*	6	1.46767	3.7	54.1
IB7	1.00000	*	7	1.24607	3.1	57.2
IB8	1.00000	*	8	1.11593	2.8	60.0
IB9	1.00000	*	9	1.04689	2.6	62.6
IB10	1.00000	*	10	.99153	2.5	65.1
IB11	1.00000	*	11	.94921	2.4	67.4
IB12	1.00000	*	12	.88098	2.2	69.6
IB13	1.00000	*	13	.85110	2.1	71.8
IB14	1.00000	*	14	.80652	2.0	73.8
IB15	1.00000	*	15	.73729	1.8	75.6
IB16	1.00000	*	16	.71593	1.8	77.4
IB17	1.00000	*	17	.68308	1.7	79.1
IB18	1.00000	*	18	.64352	1.6	80.7
IB19	1.00000	*	19	.60547	1.5	82.3
IB20	1.00000	*	20	.59092	1.5	83.7
IB21	1.00000	*	21	.57148	1.4	85.2
IB22	1.00000	*	22	.53364	1.3	86.5
IB23	1.00000	*	23	.49593	1.2	87.7
IB24	1.00000	*	24	.48935	1.2	89.0
IB25	1.00000	*	25	.43350	1.1	90.0
IB26	1.00000	*	26	.39995	1.0	91.0
IB27	1.00000	*	27	.38287	1.0	92.0
IB28	1.00000	*	28	.36691	.9	92.9
IB29	1.00000	*	29	.35996	.9	93.8
IB30	1.00000	*	30	.32101	.8	94.6
IB31	1.00000	*	31	.30816	.8	95.4
IB32	1.00000	*	32	.28774	.7	96.1
IB33	1.00000	*	33	.25403	.6	96.7
IB34	1.00000	*	34	.23740	.6	97.3
IB35	1.00000	*	35	.22831	.6	97.9
IB36	1.00000	*	36	.21047	.5	98.4
IB37	1.00000	*	37	.18732	.5	98.9
IB38	1.00000	*	38	.17310	.4	99.3
IB39	1.00000	*	39	.14057	.4	99.7
IB40	1.00000	*	40	.12598	.3	100.0

PC extracted 3 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 8 iterations.

Rotated Factor Matrix:

	Factor 1	Factor 2	Factor 3
IB1			
IB2	.49219		
IB3	.44292		
IB4			
IB5	.38452	.63192	
IB6	.52577	.38754	
IB7	.39526	.34546	
IB8	.55307	.30491	
IB9		.37720	.46694
IB10	.68620		
IB11	.63374		
IB12	.51530	.34936	
IB13	.40289	.34434	.31198
IB14	.57782		
IB15		.71209	
IB16		.71906	
IB17			.68918
IB18	.65991		
IB19	.38334	.60583	
IB20			.58188
IB21	.36804	.32361	.33598
IB22			.57359
IB23	.33103	.51568	
IB24	.67978	.36882	
IB25		.46246	
IB26	.39141	.60239	
IB27	.41998	.55544	
IB28	.43868	.59219	
IB29	.76208		
IB30	.66201		
IB31	.77815		
IB32		.57183	.34628
IB33		.65357	
IB34			.64595
IB35		.63472	
IB36		.54783	
IB37	.46849	.32374	
IB38			.45602
IB39	.30521	.43904	.35567
IB40		.35687	.33930

Appendix 8: Factor analysis of the Eisenberger Scale- Chapter 4

Analysis number 1 Listwise deletion of cases with missing values

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
EISEN1	1.00000	*	1	4.20717	18.3	18.3
EISEN2	1.00000	*	2	3.31145	14.4	32.7
EISEN3	1.00000	*	3	1.84251	8.0	40.7
EISEN4	1.00000	*	4	1.37804	6.0	46.7
EISEN5	1.00000	*	5	1.30427	5.7	52.4
EISEN6	1.00000	*	6	1.25958	5.5	57.8
EISEN7	1.00000	*	7	1.17725	5.1	63.0
EISEN8	1.00000	*	8	1.07635	4.7	67.6
EISEN9	1.00000	*	9	.97627	4.2	71.9
EISEN10	1.00000	*	10	.87181	3.8	75.7
EISEN11	1.00000	*	11	.77160	3.4	79.0
EISEN12	1.00000	*	12	.69136	3.0	82.0
EISEN13	1.00000	*	13	.58855	2.6	84.6
EISEN14	1.00000	*	14	.57491	2.5	87.1
EISEN15	1.00000	*	15	.53744	2.3	89.4
EISEN16	1.00000	*	16	.48120	2.1	91.5
EISEN17	1.00000	*	17	.47059	2.0	93.6
EISEN18	1.00000	*	18	.38310	1.7	95.2
EISEN19	1.00000	*	19	.36535	1.6	96.8
EISEN20	1.00000	*	20	.31051	1.4	98.2
EISEN21	1.00000	*	21	.18848	.8	99.0
EISEN22	1.00000	*	22	.15198	.7	99.7
EISEN23	1.00000	*	23	.08024	.3	100.0

PC extracted 3 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 6 iterations.

Rotated Factor Matrix:

	Factor 1	Factor 2	Factor 3
EISEN1		.89035	
EISEN2		.89948	
EISEN3		.88877	
EISEN4		.90105	
EISEN5			
EISEN6			.55719
EISEN7			
EISEN8			
EISEN9			
EISEN10	.73636		
EISEN11	.77903		
EISEN12	.72088		-.30097
EISEN13	.64985		
EISEN14	.48601		
EISEN15	.65473		
EISEN16	.37372		
EISEN17	-.41243		-.38684
EISEN18	.51467		
EISEN19	.66738		
EISEN20	.35617		.60738
EISEN21			
EISEN22			-.49254
EISEN23			-.59827