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**MODULATING EXPECTATIONS REGARDING (IN)EQUITIES
IN SOCIAL EXCHANGES: THE IMPACT OF FRIENDSHIP AND
KINSHIP TIES.**

By

TAMARA L. ADDISON

(June 25, 2000)

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FRIENDSHIP AND KINSHIP TIES.**

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ABSTRACT

In a series of five interrelated studies, college students' sensitivities to inequities in their own relationships and in other people's relationships were examined. In the first two studies, I analyzed reactions to feeling underbenefited in different types of personal relationships (i.e., sibling, cousin, close friend and acquaintance). People expressed more concern about being underbenefited by an acquaintance than in the other types of relationships, which did not differ from each other. The second study extended these findings by examining the role of a personality profile (shy but sociable) expected to be particularly sensitive to social threats, including those associated with inequities. As predicted, highly shy/highly sociable participants were particularly concerned about inequities, but in keeping with the first study, these differences were observed only in acquaintance relationships. In the third study, a longitudinal design focused on reactions to inequities in the course of friendship development. Participants were university students who had just moved into a university residence. Their concerns about reciprocation and perceptions of friendship quality were measured at 9 and at 75 days after first meeting their new roommates. It was found that changes in expectations and obligations of reciprocation, rather than a stable "trait" orientation to reciprocation, were particularly informative about the developmental trajectories of perceived friendship quality. In those relationships that progressed from acquaintanceship to close friendships, concern about receiving reciprocation decreased, showing a similar pattern to

the data obtained in the first study, comparing acquaintances and friends. In the fourth and fifth studies, participants were cast in the role of observer, reacting to evidence of inequities in others' relationships. Here the experimental variations included genetic relatedness, terms of a monetary transfer from parent to child, and whether the child voluntarily disclosed the terms to siblings later. The results revealed that subjects engaged in 'distributive justice' (taking funds away from those who were overbenefited and redistributing these funds to those who were underbenefited) only when a half-sibling was underbenefited but not when a full sibling was underbenefited. The various studies' findings are discussed within an integrative evolutionary social psychological and personality framework.

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CHAPTER I

INTRODUCTION

I learn to do service to another, without bearing him any real kindness: because I foresee, that he will return my service, in expectation of another of the same kind, and in order to maintain the same correspondence of good offices with me or others. And accordingly, after I have serv'd him he is in possession of the advantage arising from my action, he is induc'd to perform his part, as foreseeing the consequences of his refusal.

David Hume, A Treatise of Human Nature, 1740

Hume's quote exemplifies the implicit expectations and obligations of social exchange. It illustrates the existence of a rich set of expectations held by both the giver and receiver of benefits, despite the absence of an explicit agreement concerning the particular terms of the exchange. In addition, in reading this short passage one automatically makes certain attributions that are not addressed in the text but embedded in typical social exchange expectations. One is likely to assume that Hume is not referring to a social exchange with a brother, sister, parent or some other relative. In other words, the reader is likely to assume that the social exchange partner is non-kin.

With more and more of the recent literature linking good social relationships to better health and quality of life (e.g., Bolger & Eckenrode, 1991; Buunk & Verhoeven, 1991; Sarason, Sarason & Gurung, 1997), it is becoming more important to identify factors associated with satisfaction and quality of relationships. Although social exchange is not characteristic of all social interactions, it is a ubiquitous behavior that extends across human cultures (Alexander, 1979; Berkowitz & Daniels, 1963; Goranson

& Berkowitz, 1966; Gouldner, 1960; Pruitt, 1968) with much evidence that sustained social relationships typically depend upon perceptions of mutual benefits accruing from the association. While it is clear that one important determinant of relationship satisfaction is the perception of a 'fair' distribution of material and social resources (Buunk & Van Yperen, 1991, 1990; Davidson, 1984; Hatfield et al, 1985; Rachlin, 1987; Schafer, Keith & Lorenz, 1984; Sprecher, 1986) what is less obvious is exactly what constitutes perception of a 'fair' distribution.

A considerable literature exists dealing with the rules or norms by which people divide resources in their intimate relationships. One of the most frequently advocated models is equity theory.

Equity theory

Equity is based upon the principle of distributive justice, which maintains that benefits should be distributed according to relative inputs (Deutsch, 1985). In an equitable relationship each person's cost/benefit ratio in the relationship should be the same. This does not necessitate that each person contributes equally to the relationship, only that both partners receive equivalent benefits for investments of equal cost. This can be contrasted to equality where both partners receive identical benefits regardless of the value of their investments. Following an equity rule, a person is overbenefited when he or she has a lower cost/benefit ratio than his/her partner, and underbenefited when the focal person's cost/benefit ratio is greater than the partner's. Thus, if both partners invest equally in a relationship but one partner receives more benefits than the other, the relationship is inequitable. A partner who receives a greater proportion of the benefits is

overbenefited and one who receives fewer is underbenefited. According to equity theory, the most satisfying relationships, theoretically, are those in which partners both obtain desired rewards and enjoy equitable outcomes (Hatfield et al., 1985). Overbenefited people are expected to be less content than those who are equitably treated because they feel guilt, whereas underbenefited people are expected to be the least content because they do not receive the benefits their overbenefited partners receive.

There is considerable support for the notion that when people perceive that they are in an inequitable relationship, they generally react with distress and dissatisfaction (Buunk & Van Yperen, 1991; Buunk & Prins, 1998; Davidson, 1984; Hatfield, Traupmann, Sprecher, Utne & Hay, 1985; Schfer & Keith, 1980; Sprecher, 1986; Van Yperen & Buunk, 1990, 1994). However, there are also several other models of how people divide resources in their intimate relationships (e.g., equality, need based, authority) and in a review of this literature, Clark and Chrisman (1994) indicate that no clear picture has emerged for those researchers who have searched for a single 'rule' governing the giving and receiving of benefits.

Much variation exists in people's tolerance of resource inequities in their relationships. There are two parallel literatures relevant to understanding these variations. One literature focuses upon a number of contextual or situational dynamics that influence the extent to which people are distressed by inequities (e.g., Buunk, Colins, Taylor, Van Yperen, & Dakof, 1990; Mills & Clark, 1982; Thibaut & Kelley, 1959; Van Yperen & Buunk, 1991). For example, a variety of work suggests that the relationship of the exchange partners is particularly important (Alexander, 1979; Clark, 1985; Daly, Salmon

& Wilson, 1997; Hamilton, 1964; Mills & Clark, 1982; Tooby & Cosmides, 1996; Trivers, 1971). Other scholars have stressed the importance of personality for understanding reactions to inequities, emphasizing that some people are generally more likely to tolerate imbalances of reciprocity than are others. Some people, for example, are particularly vigilant in monitoring exchanges, and are likely to exhibit a lower threshold for tolerating failures or delays in reciprocating (Murstein & Azar, 1986; Murstein, Cerreto, & MacDonald, 1977; Sprecher, 1992, 1998).

The purpose of this thesis is to add to current understanding of variation in tolerance of inequities of social exchanges by identifying some of the situational, personality, and 'person in situation' variables that modify people's expectations and their sense of obligation concerning social exchange. The main premise of this thesis is that differences in tolerance of inequities caused by situational and personality variables can be better understood by first acknowledging the fundamental differences in expectations and obligations of social exchange in different relationships. Several different types of relationships are examined in the different studies (including friendships and acquaintance relationships) but it is important to note that because kin relationships have been underrepresented in the social relations research (e.g., see comments by Daly, Salmon & Wilson, 1997) these relationships will be a particular focus in the present research.

Thesis Content

In a series of studies, I examine college age students' sensitivity to resource inequities. The following paragraphs describe how the various studies fit together.

Following this description the chapters will be introduced separately, in more detail. The studies presented in the second and third chapters investigate students' social exchange expectations in their own relationships. People of this age, as any other age, are dealing with many different types of relationships. People have relationships with different kin, close friends, acquaintances, colleagues, and teammates just to name a few. The second chapter describes two studies in which I measured how anxious students were about receiving reciprocation in different types of relationships (e.g., sibling, cousin, close friend and acquaintance). In this study subjects' concern about the other person not reciprocating adequately was measured using a sub-scale from Sprecher's (1992, 1998) 'exchange orientation' personality construct which, taken as a whole, is thought to measure how much people want tit for tat reciprocity in their relationships. The second aim of this chapter was to investigate the interactive effects of the personality characteristics of shyness and sociability on expectations for reciprocity in different types of relationships. Those who are high in both shyness and sociability have been identified as a special subtype of shy people who are particularly anxious in social situations (Cheek & Buss, 1981). These individuals are very fearful of social situations (hence are labeled as shy) but are also very sociable as revealed in their desire to interact with others. Social anxiety, which has been conceptualized as a mechanism for coping with threat in social situations (Gilbert & Trower, 1990), has been linked to risk-averse tendencies and increased sensitivity to threat (Addison & Schmidt, 1999; Bradley, Mogg, Falla & Hamilton, 1999; Constans, Penn, Ihen & Hope, 1999; Harmen-Jones & Allen, 1998). I reasoned that those who are socially anxious might be more sensitive to the

threats of social exchange situations (e.g., being cheated). But since shy people do not feel equally shy in all relationships (Carducci, 2000), I expected their sensitivity to being 'cheated' (e.g., their exchange orientation) to be moderated by relationship type.

In both of the studies presented in chapter 2, college students' relationships were investigated cross-sectionally. In chapter 3, college age students' relationships were investigated longitudinally. Freshmen in university are typically starting the development of many new relationships. They are cast into situations with new people (e.g., roommates, classmates) and are making decisions about which people they would like to develop closer relationships with. Research has reported that 'exchange orientation' is negatively correlated with perceptions of satisfaction and various measures of quality of close relationships (Jones, 1991; Murstein & Azar, 1986; Murstein, Cerreto, & MacDonald, 1977; Sprecher, 1992, 1998). The third chapter takes a closer look at how 'exchange orientation' is related to relationship satisfaction by using a longitudinal study to examine college students' relationships with their roommates and neighbors in residence.

The final empirical chapter shifts from examining college age students' sensitivity to inequities in their own relationships to their reactions (as observers) to inequities in other people's relationships. As a social species, we are attuned to observe and learn from the others with whom we interact. One way we use this information is in forming opinions about others. For example, observing how people interact with others can influence our judgements concerning how they will interact with us (e.g., Are they suitable allies, or potential threats?). A fundamental aspect of the legal system is the 'trial

by a jury of your peers' where people are asked to make judgements about other people's actions. A more common situation is when others ask us for advice. The fourth chapter presents two experiments in which students read fictional stories about inequities that occurred in the context of familial relationships. Their reactions to the inequities (as observers) were examined. The main purpose of this study was to examine how their reactions differed when the genetic relationships of the story characters were manipulated, creating different types of relationships among the family members.

Chapter 2: Social exchange expectations in different types of relationships

In the second chapter, two studies are presented in which sensitivity to being underbenefited in personal relationships is analyzed. The first study used a between subjects design to examine whether relationship type was an important situational moderator of people's imagined responses to being underbenefited in their relationships. Importantly, both evolutionary and social psychological models suggest that people will be less concerned about being underbenefited in social exchange with kin than with non-kin (Daly, Salmon & Wilson, 1997; Daly & Wilson, 1995; Fiske, 1991; Hamilton, 1964; Trivers, 1971). Kin relationships --sibling and cousin-- were included in addition to close friend and acquaintance. In keeping with the predictions of evolutionary and social psychological models, I expected people to be more concerned when inequities occurred in acquaintance relationships than when those same inequities occurred in close friendships or kin relationships.

The second study presented in this chapter replicated the test of whether people modulate their expectations about reciprocation in social exchanges according to

relationship type, but this time a within subjects design was used in order to examine the role of the personality factors of shyness and sociability. Shy people have an intense fear of imagined or real social situations. One important trigger of shyness is unfamiliar people (Kagan, 1999; Zimbardo, Pilkonis & Norwood, 1974). Some have conceptualized social anxiety as an evolved capacity for coping with social threat (Gilbert & Trower, 1990), and there is evidence that people who experience social anxiety are more sensitive to social threats and more risk-averse than those who do not experience particularly high levels of social anxiety (e.g., Addison & Schmidt, 1999; Bradley, Mogg, Falla & Hamilton, 1999; Constans, Penn, Ihen & Hope, 1999; Harmen-Jones & Allen, 1998). One risk that is inherent in social exchange situations is the possibility of being cheated (Cosmides & Tooby, 1989, 1992). If socially anxious people are more sensitive to social threats they may be more sensitive to being cheated in social exchange situations. There is some evidence that high anxiety is associated with lower tolerance for inequities of resource exchange (Murstein & Azar, 1986). In the study presented here the interaction between shyness and sociability was examined because those high in both shyness and sociability have been identified as a sub-type of shy people who are particularly likely to feel anxious in real or imagined social situations (Cheek & Buss, 1981; Schmidt, 1999). I expected these individuals to be more anxious about being underbenefited by acquaintances (a relatively unfamiliar social relationship). Importantly, this second study examined the interactions among exchange orientation, shyness and sociability and the different types of relationships in which social exchanges occur. Although a wide variety of theoretical frameworks including field theory (Lewin, 1951), evolutionary theory

(Buss, 1999; Cosmides & Tooby, 1995; Malamuth & Addison, in press), and social cognitive theory (Ross & Nisbett, 1991), emphasize the importance of person by situation interactions for understanding psychological processes. Much of the equity research has focused either on the effects of personality or on situational dynamics.

Chapter 3: changes in social exchange expectations in developing friendships

Perceptions of inequities may arise from particular failures in reciprocating, but also from individual differences in tolerance of inequity. Research indicates that 'exchange orientation', a personality construct designed to quantify such tendencies, is associated with relationship satisfaction and various measures of relationship quality (Jones, 1991; Murstein & Azar, 1986; Murstein, Cerreto, & MacDonald, 1977; Sprecher, 1992, 1998). Although scholars have repeatedly shown exchange orientation to be associated with relationship quality at certain points in time (Buunk & VanYepren, 1991; Murstein & Azar, 1986; Murstein, Cerreto & MacDonald, 1977; Sprecher, 1992, 1998) there is very little evidence to support a particular causal path. Some researchers have suggested that exchange orientation should predict satisfaction with friendships over time (i.e., certain exchange orientation personality types may be more/or less happy with their social relationships). Others have suggested that more emphasis should be placed on the characteristics of the relationship, with the expectation that exchange orientation should be directly associated with changes in the quality of relationships. There is currently no evidence to support either model. In the research reported here, first-year university students' exchange orientation scores and the quality of new friendships with a roommate and a neighbor in their university residence were measured at 9 days and 75 days after

their first meeting. The aim of this research was to examine the longitudinal predictability of the quality of same-sex friendships from 'exchange orientation' as suggested by the current popular 'stable trait' models and from changes in reciprocity expectations as suggested by a 'relationship-specific characteristics' model.

Chapter 4: Encoding kinship, observing others and giving advice.

It is clear that information pertaining to genetic relationships influences people's social exchange decisions. Theoretically, a variety of models developing from different academic disciplines suggest that social exchange processes in kin relationships differ from other types of relationships (Daly, Salmon & Wilson, 1997; Daly & Wilson, 1995; Fiske, 1991; Hamilton, 1964; Trivers, 1971). Supporting these models, several studies now show that people report they are more likely to invest in close kin than distant kin or non-kin (Burnstein, Crandall, & Kitayama, 1994; Cialdini, Brown, Lewis, Luce & Neuberg, 1997; Essock-Vitale & McGuire, 1985) and may be more likely to tolerate imbalances of reciprocity that would not be tolerated in relationships with non-kin (Addison, chapter 2; Hames, 1987). Because an important part of human cognition involves conscious or sub-conscious assessment of the motives behind people's behaviors, one would expect that people have the ability to understand and predict other people's behavior and the motives behind those behaviors. Consider, for example how important it would be to know who can be relied on in emergencies and who may be prevented from helping out because they have obligations elsewhere.

Although there has not been much research on this topic, it is clear from 'societal' expectations that people do generally expect others to treat kin preferentially. For

example, while non-kin may be rewarded greatly for saving a stranger's life, kin are generally not acknowledged for such behavior unless it involves unusual circumstances (e.g., a child saving a parent). In addition, the legal system is thought to reflect typical expectations of society (Beckstrom, 1985) and implicitly specifies different 'rules' for kin and non-kin. For example, people are not always expected to testify against their spouses, and contract laws governing social exchange specify the need for reciprocation among non-kin but not among members of the same household (Beckstrom, 1985). The goal of the studies presented in the fourth chapter was to investigate how genetic relationships might influence people's reactions (as observers) to evidence of inequities that occur within familial relationships. Research subjects, cast in the role of observers, viewed fictional stories portraying one of two resource allocation decisions that created inequity among full and half-siblings. In one story, inequity was created by the father having differentially allocated economic benefits among the siblings. In the second variant, inequity was created when one sibling selfishly and deceptively kept parental resources from his other siblings. The genetic relatedness of family members was manipulated by changing whether certain offspring in the story were the father's genetic children or his step-children. Subjects were asked to make attributions about the protagonists in the stories and were given an opportunity to redistribute the parental resources any way they wished. According to equity theory, people seek to restore equity when a relationship has become inequitable (for reviews, see Hatfield, Taupmann, Sprecher, Utne & Hays, 1985; Roloff, 1981; Van Yperen & Buunk, 1990). Following this premise, I expected that when subjects perceived that a violation of obligations and entitlements had occurred

within the family, they would predict negative consequences for the relationships in question, and would attempt to restore equity by reallocating funds among the offspring. One of the main purposes of this study was to examine how information regarding relatedness would affect perceptions of whether the manipulations that were intended to create inequities among the siblings actually did so. According to Hamilton's theory of kin selection, close kin are expected to be more tolerant of imbalances of reciprocity than more distant kin. Accordingly, one possibility is that subjects would judge that inequities in close kin relationships would have fewer negative consequences for those story characters, and would feel less inclination to restore equity in these situations than when the inequities occurred among more distant kin.

Overview of Thesis

In summary, this dissertation investigates variation in people's expectations and obligations concerning social exchange. The dissertation is organized by three equity problems that college age students typically face, in their own relationships cross-sectionally (sibling, cousin, acquaintance, friends), in their own relationships longitudinally, and in observing others and giving advice. The first aim is to investigate differences in expectations of reciprocation as a function of different relationship types. As part of this aim, I examine the interaction between relationship type and the personality characteristics of shyness and sociability. The second aim is to examine the longitudinal predictability of the quality of same-sex friendships from 'exchange orientation' as would be expected based on the currently popular 'stable trait' models and from changes in reciprocity expectations as suggested by a 'relationship-specific

characteristics' model. Finally, the third aim of this thesis is to examine how students will react as observers to inequities that occur specifically in the context of familial relationships. As part of this aim I examine the effects of a manipulation of the family relationships among fictitious characters (genetic vs. stepfatherhood, with a concomitant full sibling vs. half sibling contrast) on reactions to evidence of inequities. Following the presentation of these studies, a final chapter offers concluding comments addressing how these findings contribute to current knowledge.

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CHAPTER II

Modulating expectations regarding (in)equities in social exchanges: integrating personality and relationship type.

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Abstract

In two studies I analyzed reactions to being underbenefited in personal relationships. The first study examined differences in people's responses to feeling that they may be the underbenefited partner in different types of relationships (e.g., sibling, cousin, close friend and acquaintance). In keeping with the predictions of evolutionary and social psychological models, people were more concerned when inequities occurred in acquaintance relationships than when those same inequities occurred in close friendships or kin relationships. The second study extended these findings by examining the role of shyness and sociability. Exchange orientation theorists have suggested that high anxiety will be associated with lower tolerance for inequities of resource exchange. Since those who are high in both shyness and sociability have been identified as a sub-type of shy people who are particularly likely to feel anxious in new or unfamiliar social situations, I expected these individuals to be more concerned about being underbenefited. In keeping with these expectations, high shy/high sociable participants were particularly concerned about receiving reciprocation only in the context of acquaintance relationships, where shy people report having great difficulty with social anxiety. The results of these studies strongly support the use of an integrative evolutionary social psychological and personality framework for studying likely reactions to inequities.

General Introduction

Stable social relationships entail bouts of giving and receiving benefits of various sorts, with an approximately equitable balance in the perceived value of the exchanges. It is widely appreciated that people *generally* prefer mutual reciprocity in their relationships (Gouldner, 1960; Berkowitz & Daniels, 1963; Goranson & Berkowitz, 1966; Pruitt, 1968; Walster, Walster & Berscheid, 1978). Perception of inequity may arise from particular failures in reciprocating, but also because of individual differences in tolerance of inequity. Some people are very vigilant in monitoring exchanges, and are likely to exhibit a lower threshold for tolerating failures or delays in reciprocating. There are two parallel literatures relevant to understanding variations in tolerance of inequities in social exchanges. One literature focuses upon situational dynamics associated with the particular exchanges and the relationship of the exchange partners (Alexander, 1979; Clark, 1985; Daly, Salmon & Wilson, 1997; Hamilton, 1964; Mills & Clark, 1982; Tooby & Cosmides, 1996; Trivers, 1971). These social psychologists and evolutionary theorists suggest that reciprocity is likely to be more characteristic of some types of relationships than others. Other scholars have stressed the importance of personality for understanding reactions to inequities, emphasizing that some people are generally more likely to tolerate imbalances of reciprocity than are others. For example, it has been suggested that those with high trait anxiety will be more anxious to receive reciprocation than others (Murstein & Azar, 1986). Although a wide variety of theoretical frameworks including field theory (Lewin, 1951), evolutionary theory (Buss, 1999; Cosmides & Tooby, 1995; Malamuth & Addison; in press), and social cognitive theory (Ross &

Nisbett, 1991), emphasize the importance of person by situation interactions for understanding psychological processes, much of the equity research has focused either on the effects of personality or on situational dynamics.

The purpose of the first study reported here was to examine whether relationship type is an important situational moderator of people's expectations about reciprocation. Using a between-subjects design, anxiety about being the underbenefited partner was assessed according to the type of relationship framing the questions. Four different relationship categories were included in this study: sibling, cousin, close-friend and acquaintance. It is particularly important to include kin relationships: Both evolutionary and social psychological models suggest that people will be less concerned about being underbenefited in social exchanges with kin than with acquaintances, and yet few studies have tested this prediction.

The second study reported here replicated the test of whether people modulate their expectations about reciprocation in social exchanges according to type of relationship, but this time a within-subjects design was used to address whether individual differences in anxiety about being underbenefited mask any effects of relationship category found in the first study. The aim of the second study was to investigate the interactive effects of the personality characteristics of shyness and sociability on expectations for reciprocity in different types of relationships. Those who are high in both shyness and sociability have been identified as a special subtype of shy people who are particularly anxious in social situations (Cheek & Buss, 1981). Social anxiety, which has been conceptualized as a mechanism for coping with threat in social

situations (Gilbert & Trower, 1990), has been linked to risk-averse tendencies and increased sensitivity to threat (Addison & Schmidt, 1999; Bradley, Mogg, Falla & Hamilton, 1999; Constans, Penn, Ihen & Hope, 1999; Harmen-Jones & Allen, 1998). I reasoned that those who are socially anxious might be more sensitive to the threats of social exchange situations (e.g., being cheated). There is some evidence that highly anxious individuals will exhibit lower tolerance to resource inequities (e.g., Murstein & Azar, 1986). But since shy people do not feel equally shy in all relationships (Carducci, 2000), I expected their sensitivity to being 'cheated' (e.g., their exchange orientation) to be moderated by relationship type. Importantly, this second study examined the interactions among exchange orientation, shyness and sociability and different types of relationships in which social exchanges occur.

Study 1: Variation in "underbenefiting exchange orientation" according to relationship category

Expectations about inequities in different types of relationships.

When people perceive that they are underbenefited in their relationships they generally react with distress and dissatisfaction (Buunk & Van Yperen, 1991; Buunk & Prins, 1998; Davidson, 1984; Hatfield, Traupmann, Sprecher, Utne & Hay, 1985; Schafer & Keith, 1980; Sprecher, 1986; Van Yperen & Buunk, 1990, 1994). These equity researchers have also identified a number of contextual or situational factors that influence the extent to which people are distressed by perceptions of imbalances in what they have received compared to what they have given the other party. These contextual

moderators include choice of reference model when drawing inferences about the relative status of the focal exchange (Buunk, Collins, Taylor, Van Yperen, & Dakof, 1990; Van Yperen & Buunk, 1991), availability of alternative relationships (Thibaut & Kelley, 1959), attributions concerning the cause of the inequity (Utne & Kidd, 1982), community size where parties reside (Hansen, 1987), need (Lamm & Schwinger, 1980; 1983; Mills & Clark, 1982), sex of the participants (Davidson, 1984; Martin, 1985; Traupmann, Peterson Utne, & Hatfield, 1981), cohabitation vs. registered marriage in the case of marital relationships (Blumstein & Swartz, 1983; Kollock, Blumstein, & Schwartz, 1994), stage of life cycle (Roberto & Scott, 1986; Rook, 1987; Schafer & Keith, 1981) and opportunity to reciprocate in the future (Hatfield & Sprecher, 1983; Nadler, Mayseless, Peri & Chemerinski, 1985). This is not an exhaustive list.

Of particular importance to the present study are various social psychological models (Clark, 1985; Mills & Clark, 1982) and evolutionary models (Alexander, 1979; Daly, Salmon & Wilson, 1997; Daly & Wilson, 1995; Hamilton, 1964; Tooby & Cosmides, 1996; Trivers, 1971), suggesting that the type of relationship in which social exchange takes place is an important situational moderator of people's expectations for reciprocation.

Communal and exchange relationships.

Clark and Mills have examined differences in expectations of reciprocation in 'communal' and 'exchange' relationships. The authors suggest that communal and exchange relationships are characterized by different norms of social exchange. "The distinction between communal and exchange relationships is based on the rules or norms

that govern the giving and receiving of benefits. In exchange relationships, benefits are given with the expectation of receiving comparable benefit in return or as repayment for a benefit received previously." (Clark & Mills, 1993, p. 684) Exchange relationships are contrasted to communal relationships where "the receipt of a benefit does not change the recipient's obligation to respond to the other's needs. It does not create a specific debt or obligation to return a comparable benefit. " (Clark & Mills, 1993, p. 684)

Relationships with acquaintances, business colleagues, and strangers are considered common examples of exchange relationships. Family, romantic partners, and friends are more typically considered examples of communal relationships and are therefore expected to be less distressed by inequities of reciprocation. Supporting the model, they have found that, compared to individuals who are in an exchange relationship, those who are in, *or desire* (see discussion below) to have a communal relationship with a particular person 1) experience less distress if this person does not immediately reciprocate a favor (Clark & Mills, 1979), 2) are less likely to feel exploited if this person does not offer repayment for a favor (Clark & Waddell, 1985), 3) are more likely to keep track of the other person's needs (Clark, Mills, & Corcoran, 1989; Clark, Mills, & Powell, 1986), and 4) are less likely to keep track of the other person's inputs to a joint task (Clark, 1984; Clark, Mills, & Corcoran, 1989).

It should be noted, however, that all of their tests of the communal model have compared these processes in friendships or potential romantic relationships with exchange relationships among strangers and acquaintances, but have not yet examined these processes among kin. In addition, although they suggest that a desire to have a

communal relationship is a sufficient condition for reduced expectations of reciprocity, Clark and Mills have manipulated only a desire for a possible romantic relationship. For example, in order to evoke a desire for a communal relationship, undergraduates would learn that an attractive person of the opposite sex was single and hoping to meet new people, while a desire for exchange relationship was evoked by informing the subject that the female experimenter was married. It is not clear that 'a desire' for a communal relationship would reduce expectations of reciprocity in other contexts.

In fact, some research suggests that acquaintances who want to become friends (i.e., desire a communal relationship) are just as anxious, and in some situations more so, that reciprocity occurs compared to acquaintances who do not wish to become friends. For example, in a series of hypothetical exchange situations, Lydon, Jamieson and Holmes (1997) investigated differences in concern over reciprocity in friendships and acquaintance relationships. Two different types of acquaintance relationships were investigated: transitional acquaintances (e.g., acquaintances who wished to become friends) and non-transitional acquaintances (who did not desire to become friends). In general, the authors found that a failure to reciprocate a favor was more anxiety provoking in the context of acquaintance relationships than in friendships. In addition, in one of their scenarios (buying dinner at a restaurant) transitional acquaintances were actually more anxious about reciprocation than were non-transitional acquaintances or close friends.

The authors further distinguished between exchange and communal relationships by suggesting that while communal relationships can vary in strength, the strength of

exchange relationships is constant (Clark, 1985; Mills & Clark, 1982). They suggest "communal relationships can be ordered in terms of the degree of responsibility assumed by one person for the other's needs" (Clark, 1985, p. 122). For example, a parent-child relationship is expected to be a stronger communal relationship than would be a relationship between best friends. As such, one would expect less distress about inequities in a parent-child relationship than in weaker communal relationships.

As mentioned earlier, this work has received some criticism that the distinction between exchange and communal relationships is an imprecise one¹ (Batson, 1993). I believe that this may be due, at least in part, to the following limitation: The model does not specify what variables will contribute to the "degree of responsibility assumed by one person for another's needs" making it difficult to operationalize the variable and thus difficult to predict a priori when reciprocation is likely to be expected. In addition, other models (including the evolutionary models presented below) suggest that the degree to which reciprocation characterizes relationships that Clark and colleagues have described as typical exchange relationships (e.g., acquaintances, business colleagues) is not constant but will in fact vary systematically with relationship dynamics.

Evolutionary models of social exchange.

Evolutionarily derived models emphasize the importance of relationships based on genetic relatedness as a motivating factor behind altruistic tendencies, so that social

¹ Batson (1993) also suggests that the difference between exchange and communal relationships may not be whether *quid pro quo* exchange principles characterize the different relationships but in the 'breadth and etiquette' of the benefits exchanged. He suggests that in communal relationships exchange may be less explicit (e.g., the variety of resources exchanged is larger and the types of items exchanged may be more difficult to compare) but still exists.

exchange among non-kin (reciprocal altruism) must be distinguished from social exchange among kin (nepotism).

Kin relationships. Hamilton's theory of inclusive fitness (Hamilton, 1964) provides a conceptual framework for understanding why reciprocal altruism is expected to be less important for kin relationships. According to Hamilton: "the social behavior of a species evolves in such a way that in each distinct behavior evoking situation the individual will seem to value his neighbors' fitness against his own according to the coefficients of [genetic] relationship appropriate to that situation" (Hamilton, 1964, pp. 23). If an altruistic act enhances a genetic relative's ability to produce viable offspring, the investment is indirectly contributing to the donor's fitness. Therefore, one would expect closer genetic relatives to preferentially help (and be less likely to harm) their closest genetic relatives (Daly, Salmon, & Wilson, 1997).

There are a variety of studies supporting this hypothesis. For example, in life or death scenarios, people imagined choosing to aid close kin over distant kin (Burnstein, Krandell, & Kityama, 1994). Similarly, Cialdini et al (1997) found that the amount of help elicited by family members (relationship undefined) was significantly greater than the amount of help elicited by acquaintances or strangers. Furthermore, as the severity of need increased, the greater was the magnitude of the difference between relationship categories. Close kin are more likely to offer help than more distant kin and the greater the magnitude of the helping behaviors received, the more likely it is to come from kin (Essock-Vitale & McGuire, 1985). Close relatives are less violent to each other, and collaborate to do violence against others more than would be expected based on how

much time they spend together (Daly & Wilson, 1988). The presence of a stepparent in the home has been shown to be a powerful epidemiological risk marker for child abuse and murder (Daly & Wilson, 1988, 1998). Fathers with both stepchildren and genetic children get along better with and spend more time with their genetic children (Flinn, 1988; Marlowe, 1999). For example, Marlowe (1999) found that among Hadza men (hunter/gatherers of Tanzania) stepfathers play more with their genetic children than with their stepchildren. During the period of observation stepfathers were never once observed playing with their stepchildren.

In addition to preferentially helping kin, because the benefits of investing in kin include fitness benefits whether the kin reciprocate or not, kin are also expected to be less likely to become distressed if no direct compensation occurs (i.e., are underbenefited). However, this should not be taken to mean that reciprocation of costs is irrelevant to kin relationships. "There is no reason why selection for reciprocal altruism cannot operate between close kin." (Trivers, 1971, p. 38) In general though, one would anticipate that expectations of reciprocation will vary according to genetic relatedness such that "there is a lowered demand for reciprocity from close kin than from distant kin and non-kin" (Trivers, 1971, p. 46).

As already mentioned, few studies investigating expectations of reciprocity have included kin relationships. Hames (1987) found that brothers tolerate imbalances of reciprocity that would be unacceptable in friendships with non-kin. It is also clear that reciprocal altruism does not typically characterize parent-child relationships. Although

other types of kin relationships are not usually investigated, based on the evolutionary model presented above the predictions are clear.

Evolutionary models of social exchange: Acquaintances and friends. According to the theory of reciprocal altruism (Trivers, 1971) social exchange between genetically unrelated individuals is expected to occur only when there is a high probability that the benefits bestowed upon others will be reciprocated, directly or indirectly, at some time in the future. Alexander (1979) describes two types of reciprocity: Direct and indirect. Direct reciprocity includes situations where the actual recipient of the benefits provides compensation. Indirect reciprocity occurs when the rewards come from a source other than the actual beneficiary (e.g., rewards for heroism or lawful behaviour come from society at large). It should be emphasized that the definition of altruism used necessitates that the benefit bestowed upon another have some non-trivial cost to the helper's inclusive fitness. In cases of trivial costs in helping there is no reason to expect that help would be given contingent on the implicit expectation of reciprocity. It follows that one crucial precursor of social exchange among non-relatives would be an adequate probability that reciprocation will occur in the future. Friendships and acquaintanceships must be distinguished in this respect. Friendships are much more likely to be characterized by a history of reciprocal exchange than are acquaintanceships. In the context of a friendship, it is expected that through these previous interactions, trust has emerged in the friend's intention to give help at some time in the future if needed. This confidence in reciprocity is presumably mediated by 'deep' emotional attachments.

Trivers (1971) suggests that emotions of friendship would evolve not as a prerequisite for altruistic behavior but *after* a system of mutual altruism has already been established.

A number of studies have confirmed that reciprocal exchange enhances trust in new and casual relationships, and that absence of reciprocity impedes it (Deutsch, 1958; Lindskold, 1978; Pilisuk, Kiritz & Clampitt, 1971; Pilisuk & Skolnick, 1968). In addition, research indicates that while tit for tat reciprocity seems to act as mutual reassurance for both exchange partners in casual relationships, it is often reacted to negatively in close friendships. For example, Jones (1991) found that a tit-for-tat exchange orientation *detracted* significantly from relationship satisfaction in established friendships for both males and females. Tooby and Cosmides (1996) suggest that "explicit contingent exchange and turn-taking reciprocation are the forms of altruism that exist when trust is low and friendship is weak or absent, and treating others in such a fashion is commonly interpreted as a communication to that effect." (p. 139)

Therefore, according to evolutionary models of social exchange between non-kin, anxieties about temporary imbalances of reciprocity are expected to vary according to cues indicative of the likelihood of reciprocation in the future. Anxiety about being underbenefited might be higher in acquaintance relationships (compared to close friendships) because one is generally less certain of an acquaintance's intentions about reciprocating. In addition, expectations of reciprocity in non-kin relationships may vary with frequency of contact. Since increased frequency of interaction increases opportunities for reciprocation, acquaintances that see each other frequently might be less concerned about temporarily being underbenefited.

Measuring expectations of reciprocation: Underbenefiting exchange orientation.

Although people may *generally* prefer reciprocity in their relationships, adherence to the conditional rules of reciprocal exchange is variable (Murstein & Azar, 1986; Sprecher, 1998, 1992). Personality researchers have designed a scale to quantify a person's inclination to be concerned or anxious about giving more than they receive; this has been called "*underbenefiting exchange orientation*" (UEO) by Sprecher (1992, 1998) who alleges that the scale measures 'concern that one is not the underbenefited partner in the relationship' (Sprecher, 1998, p. 220). People high on underbenefiting exchange orientation are likely to keep close track of the benefits that others owe them. Such people are likely to feel high levels of anxiety when they are the underbenefited partner in a relationship and they tend to expect immediate reciprocation. For example, if such a person had taken his/her friend out to dinner s(he) might be particularly anxious to soon receive an invitation back.

According to Murstein, Cerreto, and MacDonald's (1977) original conceptualization, people high in exchange orientation are expected to be more aware of imbalances of reciprocity and more distressed by these imbalances than those with low exchange orientation. Importantly, Sprecher (1992) has argued that one difficulty with Murstein et al's original formulation was that it did not adequately distinguish between concern about *benefits owed* to others and *benefits expected* from others. Murstein and Azar's (1986) scale combined both types of questions to measure a single dimension, 'exchange orientation'. Murstein and Azar's (1986) exchange orientation scale was primarily composed of items addressing people's concern about benefits expected from

others (14 of 21 items); however, it did have several questions (5 of 21) measuring concern about returning benefits to others, and 2 items combined both concepts.

Accordingly, Sprecher (1992, 1998) defines two distinct types of exchange orientation: overbenefiting exchange orientation (OEO) and underbenefiting exchange orientation (UEO). *Overbenefiting exchange orientation* measures 'concern that one is not the overbenefited partner' which refers to a desire to confer benefits on the other or not to be indebted to the other in a relationship (Sprecher, 1998, p. 220). In contrast, *underbenefiting exchange orientation* (which is the focus of the current paper) measures 'concern that one is not the underbenefited partner in the relationship', or anxiety about being taken advantage of or exploited by the other person.

In the current study, subjects were asked how they would feel about each of the items on this UEO personality scale in relation to a particular relationship, in order to measure the amount of anxiety felt when underbenefited in these relationships. Since this scale includes a variety of different types of social exchange situations the scale score can be conceptualized as a general tendency to feel anxious about being underbenefited in a particular kind of relationship.

Four categories of relationship were chosen: Sibling, cousin, close friend, or acquaintance. Based upon the logic of evolutionary models of social exchanges, it was expected that anxiety about being underbenefited would vary according to relationship category and according to frequency of contact or interaction with the particular exchange partner. More specifically, I expected less anxiety about direct reciprocation (low UEO score) from siblings and cousins, even for those subjects who reported

infrequent contact with them. I also expected that anxiety about being underbenefited would be lower for friendships than for acquaintance relationships because friendships are more likely to have longer histories of reciprocal exchange than are acquaintance relationships. Anxiety about being underbenefited was expected to be highest in acquaintance relationships, particularly for those acquaintances who did not see each other very often.

Methods

Participants and procedure.

Questionnaire booklets were randomly distributed among 91 undergraduates (15 males and 76 females) from a second year psychology class at McMaster University. Their mean age was 23 (SD = ± 5.94) years. The participants completed the paper-and-pencil task of answering 18 items of Sprecher's (1998) "underbenefiting exchange orientation" scale (see Appendix A). Each person was asked to imagine one person when answering each item, and this person was to be either a sibling, a cousin, a close friend, or an acquaintance. For example, subjects in the sibling condition were asked to "take a moment to think about one of your brothers or sisters. Think about the way he/she looks and some of the things you know about him/her. When you are ready, answer each of the following questions in relation to the sister or brother that you imagined". Sprecher's (1998) underbenefiting exchange orientation questionnaire was revised appropriately for the relationship category (described below). After completing the UEO items the participants answered questions about their frequency of contact with the person they

imagined and they also provided basic demographic information about themselves and the person they imagined (e.g., sex, age). The entire task took about 20 minutes.

Dependent variables.

Concern about being underbenefited. Each participant completed Sprecher's (1998) underbenefiting exchange orientation questionnaire (UEO). A seven-point scale anchored by 7 = 'sounds very much like me' and 1 = 'sounds not at all like me' accompanied each item. Previous studies measuring exchange orientation have typically used scales where the majority of scale items had a general referent (e.g., I usually do not forget if *someone* owes me a favor) and the remainder of items referenced a variety of different relationships (e.g., a friend, a neighbor, or partner). In the present study the scale was revised for each of the four groups so that the referent in each of the items was appropriate for the particular relationship context: 'your brother or sister', 'your close friend', 'your cousin', or 'your acquaintance'. Two of the 20 UEO scale items referenced situations specific to romantic relationships, so these items were deleted as inappropriate to the relationship categories addressed in this study. The final UEO scores were computed by adding all the scale items.

Frequency of Contact. The frequency of contact between the subjects and the person they were imagining in the social exchange situations was assessed with two questions. Subjects were asked: "How often do you see the brother/sister [cousin, close-friend or acquaintance] you answered the questions about?" and "How often do you talk to the brother/sister [cousin, close-friend or acquaintance] you answered the questions about?". Subjects indicated their response to each of these questions by choosing one of

the following categories: daily, every couple of days, weekly, biweekly, monthly or yearly. To create a score, the categories were given numerical values (daily = 6, every couple of days = 5, weekly = 4, biweekly = 3, monthly = 2, or yearly = 1). Both parametric and non-parametric correlations between the two measures were high (Pearson's $r = 0.869$, $N = 90$, $p < .0001$; Kendall's $\tau_b = 0.815$; Spearman's $\rho = 0.875$). As can be seen from Table 2.1, the response distributions are very similar for the two variables. Given the similarity of these distributions, the high correlations, and the conceptual similarity between the two measures, the scores on each of the items were standardized and then an average was computed to form an overall measure of Frequency of Contact.

Insert Table 2.1 here

Overview of Data Analyses.

Two predictions were made. First, anxiety about being underbenefited was expected to vary according to the relationship context imagined. To test this hypothesis, an ANOVA with relationship context (close friend, sibling, cousin, or acquaintance) as a between-groups factor was performed on underbenefiting exchange orientation scores. It would have been interesting to look at differences according to relationship categories after 'controlling for' frequency of contact by including it as a covariate in these analyses. However, since an interaction between frequency of contact and relationship type was expected, including frequency of contact as a covariant in the analysis of variance

described above would violate the assumption of equal slopes. In other words, since frequency of contact is expected to have a different effect upon exchange orientation scores in the different relationships, 'controlling for' frequency of contact in ANOVA will not keep the effects of frequency of contact constant.

The second prediction was that frequency of contact was expected to have a different effect on exchange orientation in the different relationships. One way to examine this hypothesis would be to dichotomize the Frequency of Contact variable and include it as a between subjects factor. However, not surprisingly, frequency of contact was highly correlated with relationship type. Thus, when the same criteria were used to create high and low frequency groups for each of the four relationships there were very unequal n's in the different groups. For example, the majority of friendships were classified as high frequency and the majority of cousins were classified as low frequency. Therefore, to investigate the relationship between underbenefiting exchange orientation and frequency of contact, Pearson's correlations are presented for each relationship separately below. The correlations were followed up with four one-way ANOVA's with Frequency of Contact (frequent contact, infrequent contact) as a between subjects measure. For each of the four relationships, Frequency of Contact was dichotomised using median splits to create the frequent contact and infrequent contact groups.

Results

Descriptive Statistics.

Underbenefiting exchange orientation. The average UEO score (averaging across all four relationships) was 55.74 (SD 17.31). If this value is converted into an average

score (i.e., by dividing by the 18 items on the scale) the mean becomes 3.02 (SD 3.94) which is similar to the value (2.70) reported by Sprecher (1998). The mean UEO scores according to relationship category will be discussed below. Also like Sprecher (1998), I found no sex differences for UEO scores averaged across relationships, nor within each of the four different relationships.

Frequency of contact. As mentioned above, the frequency of contact among acquaintances, cousins, close friends and kin varied significantly. The means and standard deviations for each of these relationships are presented in table 2.2 (the unstandardized means are presented also). An ANOVA indicated that frequency of contact varied significantly across relationships (ANOVA: $F(3, 90) = 23.30, P < 0.0001$). Frequency of contact was lowest for cousins (Unstandardized mean = 2.54 which represents monthly to bimonthly contact). Post hoc tests revealed that frequency of contact among cousins was lower than for any other relationship (Tukey HSD = -2.36, $p < .001$ compared to sibling, Tukey HSD = -3.44, $p < .001$ compared to close friends, Tukey HSD = -2.37, $p < .001$ compared to acquaintance). It was about equal for siblings and acquaintances (Tukey HSD = -.007, $p = .999$) who were, on average, in contact on a weekly to biweekly basis (unstandardized means = 4.42 and 4.43, respectively). Finally, friends had the most frequent contact (the unstandardized mean = 5.28 indicating a daily to weekly basis, on average) compared with the other three relationships (Tukey HSD = 1.07, $p = .08$ compared to sibling, cousins (as above), Tukey HSD = 1.07, $p = .06$ compared to acquaintance). Non-parametric tests also indicated a significant main effect for 'seeing the partner' [Chi-Square=31.52, $df = 3, p < .0001$] and 'Talking to the partner'

[Chi-Square=40.47, df = 3, $p < .0001$]. Similar results to the above were also found for both variables when non-parametric tests were used for the separate contrasts.

 Insert table 2.2 here.

Underbenefiting exchange orientation according to relationship category.

The analysis of variance revealed the expected significant main effect for relationship category [$F(3,82) = 9.59, p < 0.0001$]. The results are portrayed in figure 2.1. Post hoc contrasts revealed that underbenefiting exchange orientation was significantly higher for acquaintance relationships than for any of the other three relationships (Tukey HSD = 17.86, $p < .001$ for acquaintance compared to sibling, Tukey HSD = 16.31, $p < .001$ for acquaintance compared to close friends, Tukey HSD = 21.83, $p < .001$ for acquaintance compared to cousins).

 Insert figure 2.1 here.

Frequency of Contact.

The second set of predictions was that the frequency of contact would moderate concern about being underbenefited in non-kin relationships. Moreover, frequency of contact among non-kin was predicted to affect UEO scores in acquaintanceships but not for close friends. Pearson's correlations showed that underbenefiting exchange orientation scores were significantly and negatively associated with Frequency of Contact for acquaintance relationships only (Pearson's $r = -.588, N = 23, p < .01$). UEO scores

were higher for acquaintances who had less frequent contact than those who had more frequent contact. However, the frequency of contact did not significantly influence underbenefiting exchange orientation scores in any other relationship (for siblings Pearson's $r = .112$, $N = 19$, $p > .05$; for cousins Pearson's $r = .194$, $N = 23$, $p > .05$; and for close friends Pearson's $r = .284$, $N = 25$, $p > .05$). As mentioned earlier, the correlations were followed up with four one-way ANOVA's with Frequency of Contact (frequent contact, infrequent contact) as a between subjects measure. For each of the four relationships, Frequency of Contact was dichotomised using median splits to create the frequent contact and infrequent contact groups. The mean frequency of contact values for the 'frequent' and 'infrequent' contact groups as a function of relationship type are shown in table 2.3. Analyses of variance indicated that participants who had less frequent contact with their acquaintances had higher underbenefiting exchange orientation scores than those with frequent contact [$F(1,22) = 8.88$, $p < .01$]. However, frequency of contact did not influence UEO scores in any of the other relationships [for siblings $F(1,19) = .272$, $p > .05$; for cousins $F(1,23) = .005$, $p > .05$; for close-friends $F(1,25) = 1.56$, $p > .05$]. Figure 2.2 illustrates the mean UEO scores for high and low frequency groups as a function of relationship type.

 Insert Table 2.3 and Figure 2.2 here.

Discussion

As predicted, the results indicate that anticipated anxiety about being underbenefited varied according to relationship category. Underbenefiting exchange

orientation scores were significantly higher in acquaintance relationships compared to the other three relationships. In addition, it was found that frequency of contact modulated UEO scores differently for acquaintance relationships compared to the other three relationships. In acquaintance relationships frequent contact was associated with lower underbenefiting exchange orientation scores. This relationship did not exist for close friends or kin.

Although one might also have expected frequency of contact to be associated with higher anxiety about being underbenefited in friendships as well (less frequent contact might indicate less cohesive relationships and might be associated with less trust in future reciprocity), it should be noted that in this study, participants were asked to imagine a *close friend*. The mean level of frequency of contact was higher for this group than any other relationship (including siblings) and suggests that in general, the participants probably thought of very close friendships. Tooby and Cosmides (1996) might consider these relationships the most likely to have 'deep emotional engagement' and hence be the most resistant to temporary imbalances of reciprocity.

Particularly noteworthy was the low anxiety about being underbenefited by cousins. Despite the low frequency of contact between cousins (significantly lower than any of the other relationships), their UEO scores were quite low (similar to those obtained for close friends and siblings). This provides some support for the evolutionary models suggesting that expectations of reciprocity are reduced in relation to cues of genetic relatedness. However, the current results did not support the prediction that siblings would be more likely to tolerate imbalances of reciprocity (have lower UEO

scores) than cousins. Subjects were similarly expectant about reciprocation with siblings and with cousins, although the UEO were significantly lower than were those for acquaintances.

Overall, these data provide support for the importance of kinship and for the importance of cues that signal a sustained ongoing relationship . They suggest that relationship dynamics are important situational moderators of anxiety about expectations of reciprocity in social exchanges.

Study Two: social anxiety, underbenefiting exchange orientation and relationship context

The purposes of this second study were two-fold. The first purpose was to replicate the findings of experiment one, using a within-subjects experimental design in order to simultaneously assess modulation of underbenefiting anxiety according to individual differences in underbenefiting exchange orientation (UEO) and according to relationship context. The second purpose was to test the hypothesis that high levels of social uncertainty or 'social risk' contribute to elevated vigilance for being underbenefited in social exchanges.

In the first study, I hypothesized that underbenefiting exchange orientation would be higher in acquaintance relationships compared to close friendships because acquaintanceships are typically new or casual relationships and thus entail higher levels of uncertainty about benefiting from the relationship. I also hypothesized that frequency of contact would be important to expectations of reciprocity because amount of contact

would (1) cue the probability of a partner's intention to continue the relationship (increasing the probability of future contact), and (2) be associated with better evidence of the partner's likelihood of reciprocating based on previous interactions. The results of the first study indicated that UEO was higher in acquaintance relationships and that frequency of contact modulated expectations of reciprocity in this relationship .

Another way to explore the relationship between social uncertainty and expectations of reciprocity is to examine the social exchange preferences of people who are likely to have different perceptions about potential costs or risks in forming social relationships. Exchange orientation theorists (Murstein & Azar, 1986) have found some support for the hypothesis that high trait anxiety will be associated with lower tolerance for inequities of resource exchanges. They suggest that highly anxious individuals may be overwhelmed by anxiety about being taken advantage of and thus are more concerned about receiving reciprocated benefits from others. Personality psychologists have identified a special subtype of shy people as particularly likely to experience anxiety in social situations. These individuals are very fearful of social situations (hence are labeled as shy) but are also very sociable as revealed in their desire to interact with others. In this second study my goal was to examine the interaction between these personality characteristics and expectations of reciprocity in different types of relationships. I expected that the increased social anxiety that results from the combination of high shyness and high sociability would be associated with higher anxiety about being underbenefited, particularly in acquaintance relationships where shy people report having the most difficulty (Carducci, 2000).

Anxiety and perception of risk

A growing body of literature indicates that anxious individuals may have an attention bias toward potentially threatening information. Studies show that highly anxious individuals estimate more risk than less anxious individuals (Constans & Mathews, 1993; Harmon-Jones & Allen, 1998; Johnston & Tversky, 1983; Magnúsdóttir & Smári, 1999), they are more likely to notice and rely on cues that signal danger and respond faster to threat-relevant stimuli (Broadbent & Broadbent, 1988). For example, Mogg and Bradley (1999) found that anxious individuals showed an attention bias for threatening faces (angry faces) over neutral faces. In contrast, less anxious individuals did not show a bias for the threatening faces, but instead showed an attention bias to happy faces over neutral faces. These results replicate the results of one of their earlier studies (Bradley, Mogg, Falla, & Hamilton, 1998). Similarly, Lundh and Ost (1996) found that social phobics who had previously rated the extent to which faces were 'critical' or 'accepting' were more likely to remember 'critical' faces during a recognition task 5 minutes later.

In addition to paying more attention to sources of threatening information, highly anxious individuals are more likely to interpret *ambiguous stimuli* in a threat-relevant manner (Constans, Penn, Ihen & Hope, 1999; MacLeod & Cohen, 1993). For example, Constans and colleagues (1999) found that socially anxious subjects had more threatening interpretations of ambiguous interpersonal events portrayed in fictional stories than non-socially anxious subjects.

Taken together, these studies indicate that anxious individuals, compared to others, are more likely to expect and interpret social situations in a negative or threatening way. Individuals who are both very shy and very sociable have been identified as a special sub-group of shy people who are particularly likely to experience anxiety in new and unfamiliar situations or relationships (see below).

Shyness and Sociability. Shy people are generally expected to appear quiet and reserved in social situations, and that is how they typically behave. Yet among shy people, the degree of inclination to be sociable may be differentiated between those who prefer to be alone (low sociable) and those who wish to interact with others (high sociable). Schmidt (1999) explained that the anxiety caused by real or imagined social situations may lead to an approach-avoidance conflict in those who are high in both shyness and sociability. He suggested that people who are high in both shyness and sociability “experience ... both negative and positive emotions: a desire to affiliate with others, but a fear of doing so.” (p. 320) He contrasts these individuals with high shy and low sociable individuals who may “experience relatively less conflict in such situations because they do not have the same desire to affiliate with others.” (p. 320)

Distinctions among very shy people according to whether they are also highly sociable or not, and between people who are and are not shy have been made on physiological, behavioral and psychological levels. For example, those highly sociable but shy individuals have been shown to differ from the other shy, unsociable people and from people who are not shy on measures of heart rate (Schmidt & Fox, 1994), frontal brain electrical activity thought to correspond to the facilitation and maintenance of

approach and avoidance behaviors (Schmidt, 1999), and the amount of behavioral anxiety they experience when interacting with unfamiliar peers (Cheek & Buss; 1981). More specifically, Cheek and Buss found that high shy/ high social subjects talked less, engaged in more nervous gestures and maintained less eye contact when interacting with unfamiliar peers. They were also judged by observers to be more worried, tense, and less friendly.

For these reasons, I measured the relationships among shyness, sociability and underbenefiting exchange orientation scores on the expectation that shy but sociable individuals are particularly likely to experience social anxiety during real or imagined social interactions. I chose to study social anxiety as opposed to the more general trait anxiety studied by Murstein and Azar (1986) because the degree of social anxiety experienced by shy people is expected to vary across different types of relationships.

Shy people experience extremely high levels of anxiety in response to real or even imagined social situations, but shy people do not feel equally shy in all types of relationships. Carducci (2000) reported that 75% of shy people report feeling shy with strangers. This percentage decreases substantially for relationships with kin. Only 22% reported feeling shy with their parents and 20% with their siblings. He suggested that the biggest problem area for shy people is starting new relationships (Carducci, 2000).

I therefore expected the shy but sociable individuals to be more likely to interpret ambiguous and negative social cues in a threat-relevant manner than less sociable shy people or people who are not shy, since they are not expected to be particularly anxious about social interactions. Since shy people report experiencing the most anxiety in new

and casual relationships, and since one is generally less certain about the intentions of an acquaintance compared to friends, siblings, and cousins, I expected the UEO scores of the high shy/high sociable individuals to be higher for acquaintance relationships. One risk inherent in social exchange relationships is the possibility of being cheated (Cosmides & Tooby, 1989, 1992). If socially anxious individuals are more likely to interpret ambiguous information in a threatening way, they may be more likely to want the assurance of immediate reciprocity in their acquaintance relationships. It should be noted that in the present study subjects were not selected based on 'extreme' shyness and sociability scores. In the present study underbenefiting exchange orientation was examined in relation to a 'normal' distribution of shyness and sociability scores.

Methods

Participants and procedure.

Forty-three introductory psychology students at McMaster University participated in this experiment in return for partial course credit. Participants had a mean age of 20 ($SD=1.79$) years (ranging from 18 to 29). Each participant completed a questionnaire booklet during a small group session (5 to 10 students). The task took about 40 minutes to complete.

Each booklet included Sprecher's (1998) underbenefiting exchange orientation scale repeated four times for each relationship of close friend, acquaintance, sibling and cousin relationships. The booklets also contained five highest loaded items (Bruch, Gorsky, Collins, & Berger, 1989) from Cheek's (1983) shyness scale and five from the revised sociability scale (Cheek & Buss, 1981). Questions about subjects'

age and sex were included as well as frequency of contact and sex and age for each person imagined when completing the four UEO scales.

Concern about being underbenefited (UEO). As in study one, the two items referring to situations specific to romantic relationships were omitted. Participants rated each of the 18 items for each of the four relationships on a seven-point scale where 7= 'sounds very much like me' and 1= 'sounds not at all like me'. The UEO scores for each type of relationship were computed by creating an aggregate score from the 18 respective scale items for each of the four relationship categories.

Shyness and sociability. Shyness was assessed using the 5 highest loaded items (Bruch, et al., 1989) from Cheek's (1983) shyness scale. The items on this scale (e.g., "I find it hard to talk to strangers" and "I feel inhibited in social situations") were designed to assess people's fear in social situations. Cheek and Buss's (1981) 5-item sociability scale was used to assess participants' general tendency to prefer the company of others. Reliability and validity data for these scales are within acceptable standards (Bruch, et al., 1989; Cheek & Buss; 1981). In the present study, the shyness and sociability scales had alpha coefficients of .89 and .85, respectively. The shyness and sociability scales are appended (Appendix A, ii).

Statistical methods.

The first goal of the current study was to determine if relationship type was an important situational moderator of underbenefiting exchange orientation (i.e., to replicate the findings of study one). To investigate within-subject variation in exchange orientation across relationship contexts, a repeated measure ANOVA, with

Relationship Context (sibling x cousin x close-friend x acquaintance) as a within-subjects factor, was conducted on underbenefiting exchange orientation (UEO).

The second goal of this study was to examine the effects of shyness and sociability on people's anxiety about being underbenefited. Bruch et al (1989) point out that using traditional analysis of variance is inappropriate when substantial covariation between predictors exists. In other studies, correlations between shyness and sociability have ranged from fairly low (e.g., -.23, Bruch, Rivet, Heimberg, Hunt, & McIntosh, 1998) to moderately high (e.g., -.47, Bruch et al 1989; -.43, Jones, Briggs and Smith, 1986). Dichotomizing subjects into groups based on median splits (or based on extreme scores) can create "pseudo-orthogonality" when the correlation between predictors is high (see Humphreys & Fleishman, 1974). The correlation between shyness and sociability in the current study was also fairly high (see below). In keeping with the suggestions of Bruch et al 1989, a series of hierarchical regression analyses were conducted (one for each of the four relationship types) in order to examine the relationship between shyness and sociability and UEO scores. For each relationship, underbenefiting exchange orientation scores were regressed on shyness, sociability and their interaction. As recommended by Aiken and West (1991), both predictor variables (shyness and sociability) were centered for the regression analysis. To create the interaction term, the product of these centered variables was computed. Finally, the regression analyses were followed up with analyses of simple slopes (see Aiken & West, 1991) to determine the nature of the interaction effects.

Results

Associations among Measures.

Correlations between variables (shyness, sociability, and UEO scores for each relationship category) are presented in Table 2.4.

 Insert Table 2.4 here.

Underbenefiting exchange orientation in different relationship types. As shown in Table 2.4, correlations among underbenefiting exchange orientation scores for the four relationships were high. This indicates that those who were more anxious about being underbenefited in one relationship generally were anxious in their other relationships as well, and this result provides support for the use of underbenefiting exchange orientation as a personality construct that measures people's tendency to expect reciprocation in different situations.

Still, the first goal of the current study was to determine if relationship type was an important situational moderator of underbenefiting exchange orientation (i.e., to replicate the findings of study one). The results (Figure 2.3) indicate that the main effect of relationship type on UEO score varied significantly in this within-subject design [$F(3,126) = 3.78, p < 0.01$] as it had in study one with the between-subjects design. Anxiety about being underbenefited was higher for acquaintance relationships than for the other three relationships. Post hoc contrasts revealed that UEO scores were significantly higher for acquaintances than for cousins [$F(1,42) = 9.87, p = 0.003$] and

higher for acquaintances than for close friends [$F(1,42) = 3.29, p = 0.077$] and siblings [$F(1,42) = 3.29, p = 0.069$], but not quite statistically significantly so. Although the same pattern of results is seen across relationships in both studies, the magnitude of the differences from the within-subjects design is clearly much smaller here than in the first study (Figure 2.1). In this within-subjects design, the range of UEO scores within each relationship was larger than the results for the between-subjects design. In the within subject design UEO scores were 15 - 20 points higher in all four relationship categories. Close examination of the data revealed that three subjects had extremely high UEO scores across all four relationships. These outliers were not removed from the data; however, it should be noted that all analyses reported here showed stronger effects when these participants were excluded.

Insert Figure 2.3 here.

Shyness and sociability. The correlation between shyness and sociability in the current study was $r(n=43) = -0.48$ which indicates that people who are shy tend not to be sociable as matches our common experience and meaning of the word shy. For this sample the mean shyness score was 16.7 (SD = 8.02) with values ranging from 5 to 32 from a possible range 5 to 35. For sociability the mean was 28.2 (SD = 5.37) with values ranging from 17 to 35 from a possible range of 5 to 35.

Predicting anxiety about underbenefiting in social exchange on the basis of shyness and sociability.

The second goal of study two was to examine the impact of shyness and sociability in modulating UEO scores in the different relationships.

Insert Table 2.5 here.

Table 2.5 presents the results of the hierarchical regression analysis indicating a significant main effect for sociability within acquaintance relationships; those who scored high on sociability had higher UEO scores in acquaintance relationships. There were no main effects for shyness. However, recall that the prediction was that the shy and highly sociable people would score high on the UEO scale. This prediction is best assessed by examining the UEO scores according to the interactions between shyness and sociability in acquaintance relationships. The regression slopes of the two-way interaction for each of the relationships are plotted in Figure 2.4. It was only within acquaintance relationships that the interaction between shyness and sociability predicted expectations of reciprocity. Neither the sociability score, nor the shyness by sociability interaction, significantly predicted UEO scores in the other relationships. When shyness was low, degree of sociability did not influence expectations that an acquaintance would reciprocate. However, when shyness was high, there was an effect of sociability; those participants who were higher in sociability had greater concern about whether their acquaintances would reciprocate. Analysis of simple slopes indicated that for those with

high sociability, the regression of UEO on shyness significantly differed from zero ($B = .398, p < .05$).

 Insert Figure 2.4 here.

Discussion

“The No. 1 problem area for the shy is starting a relationship.” (Carducci, 2000, p. 40)

New and developing relationships. As discussed earlier, tit for tat reciprocation has been described as both normative and important to new and developing friendships (Berkowitz & Daniels, 1963; Goranson & Berkowitz, 1966; Gouldner, 1960; Pruitt, 1968). This is true not only for exchange of tangible resources but also for exchange of social support. For example, self-disclosure has been shown to be an important predictor of closeness in relationships, and reciprocity of self-disclosure is an important predictor of whether relationships are established (Laurenceau, Barret, & Pietromonaco, 1998).

Why is tit for tat reciprocity so important to new friendships? Lydon, Jamieson and Holmes (1997) discuss the importance of reciprocity for ‘would be’ friends (acquaintances that hope to become friends). They explain how evidence of reciprocity secures “feelings of equal involvement and attachment” (p. 537). The authors suggest that ‘would-be’ friends may try to focus on the other person’s needs but find themselves drawn into concerns of reciprocity because they require evidence of their partner’s intentions to continue the relationship. As such, ‘reciprocity becomes a mechanism for inferring acceptance or rejection’ (Lydon, Jamieson & Holmes, 1997, p. 537).

The results of study two indicated that high shy/high social individuals were

particularly concerned about being the underbenefited partner in acquaintance relationships. That socially anxious people would be more anxious about receiving cues of 'acceptance' from others (i.e., be more desirous of such cues) than would non-socially anxious people is not particularly surprising. Immediate reciprocity can signal attentiveness and interest in continuing the relationship. However, enhanced concern about receiving reciprocation may be related to their difficulties in making friends.

Roberts and Sherratt (1998) suggest that the development of cooperative relationships proceeds through social exchanges with increasing investments. The authors proposed a 'raise the stakes' strategy entailing small initial investments in others and increases in investments only when previous investments are matched. They argued that this strategy allows 'testing the water' rather than taking 'sudden leaps of faith' in cooperation. Thus, friendship formation typically involves a complicated progression of social exchange interactions that requires valuations of what others expect. Moreover, although high expectation of reciprocation is normative for new relationships, it is also thought to communicate lack of interest in forming emotional attachments. For example, Tooby and Cosmides (1996, p. 139) suggested that "explicit contingent exchange and turn-taking reciprocation are the forms of altruism that exist when trust is low and friendship is weak or absent, and treating others in such a fashion is commonly interpreted as a communication to that effect." Thus, inappropriately high expectations of reciprocity may signal to others that one is not particularly interested in forming emotional attachments.

Close friendships and kin relationships. It appears as though the difficulties that shy

people have in forming relationships do not extend to their close relationships. Carducci (2000) suggests that “if you get into an intimate relationship, shyness no longer seems to be a problem” (p.40). While forty percent of the respondents to Carducci and Zimbardo’s (1995) 5-item *Psychology Today* survey said ‘they had trouble developing relationships...only seven percent of the shy [said they] have a problem with intimacy’ (Carducci, 2000, p. 40). The results of the current study also suggest that it is important to distinguish between different types of relationships. They show that the high anxiety experienced by the high shy/high social group about being the underbenefited partner in acquaintance relationships did not extend to their close friendships and kin relationships.

General Summary and Conclusions

The underbenefiting exchange orientation scale is thought to measure anxiety experienced when underbenefited (or concern that others will reciprocate) across social exchange situations and relationships. Based upon work from several different theoretical perspectives, I expected that underbenefiting exchange orientation would vary across different types of relationships. Supporting these expectations, the results of both study one and study two indicated that anxiety about being underbenefited was higher in acquaintance relationships than in close friend, sibling or cousin relationships. These results illustrate that relationship type is an important situational influence on reactions to inequities of reciprocity. It was also found that the frequency of contact moderated the amount of anxiety about being underbenefited in acquaintance relationships. This provided some support for the hypothesis that 'uncertainty' about a partner's intention to reciprocate contributes to higher expectations of reciprocation. Experiment two provided

additional support for this hypothesis. The results of this second experiment indicated that high shy, high sociable individuals (who are especially likely to be anxious in social situations) were particularly concerned about being the underbenefited partner in acquaintance relationships.

Taken together, the results of experiments one and two indicate that considering both situational variables and individual differences provides a powerful tool for understanding reactions to potential inequities in social relationships.

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Table 2.1
Response Distributions (as %) for 'How often Subject Sees Relationship Partner'
and 'How often Subject Talks to Relationship Partner'.

<i>Percent Frequency</i>	Daily	Every couple of days	Weekly	Biweekly	Monthly	Yearly
How often subject sees relationship partner	10	13	13	13	29	21
How often subject talks to relationship partner	6	12	10	11	35	25

Table 2.2
Mean Frequency of Contact (and SD)
according to Relationship Type

<i>Relationship Type</i>	Standardized		Unstandardized		
	Cases	Mean	St. Dev.	Mean	St. Dev
Sibling	19	.15	.87	4.42	.87
Cousins	23	-1.00	.84	2.54	1.33
Close Friends	25	.69	.56	5.28	.90
Acquaintances	23	.16	.65	4.43	1.04

Table 2.3
Standardized Mean Frequency of Contact (and SD) for the Frequent and Infrequent Contact Groups as a Function of Relationship Type.

	Relationship Type			
	Sibling	Cousin	Close Friend	Acquaintance
<i>Frequent Contact Group</i>	1.65 (SD = 0.60)	-.63 (SD = 1.20)	2.27 (SD = 0.0)	1.30 (SD = 0.51)
<i>Infrequent Contact Group</i>	-1.20 (SD=1.30)	-3.37 (SD = 0.60)	.55 (SD = 0.99)	-.59 (SD = 1.12)

Table 2.4
Correlations between Shyness, Sociability, and UEO for Sibling, Cousin, Close-friend and Acquaintance Relationships

<i>Variables</i>	Correlations				
	Shyness	Sociability	UEO Sibling	UEO Cousins	UEO Close friends
Shyness					
Sociability	-.480**				
UEO Sibling	.036	-.064			
UEO Cousins	.030	.007	.753**		
UEO Close Friends	.093	.019	.866**	.831**	
UEO Acquaintances	.167	.285	.394**	.663**	.587**

Note. N = 43, ** Correlation is significant at the .01 level (2-tailed)

Table 2.5
Hierarchical Regression Analyses Predicting Underbenefiting Exchange Orientation
in Sibling, Cousin, Close-friend and Acquaintance Relationships

<i>Predictors</i>	Relationship Type							
	Sibling		Cousin		Close Friend		Acquaintance	
	R ² Change	β	R ² Change	β	R ² Change	β	R ² Change	β
Main Effects:								
Shyness	.001	-.02	.001	.02	.009	.11	.028	.35*
Sociability	.003	-.10	.001	-.01	.005	.04	.173**	.41*
Two-Way Interaction:								
Shyness x Sociability	.032	.18	.030	.18	.036	.19	.073*	.28*

Note. N = 43, * significant at the .05 level, ** significant at the .01 level

Figure Legend

Figure 2.1. Underbenefiting Exchange Orientation (UEO) in sibling, cousin, close friend and acquaintance relationships.

Figure 2.2. Interactive effect of relationship type and frequency of contact on Underbenefiting Exchange Orientation (UEO).

Figure 2.3. Underbenefiting Exchange Orientation (UEO) across relationships: A replication of study one.

Figure 2.4. Interaction between Shyness and Sociability in predicting Underbenefiting Exchange Orientation in the four relationships

Figure 2.1. Underbenefiting Exchange Orientation (UEO) in sibling, cousin, close friend and acquaintance relationships.

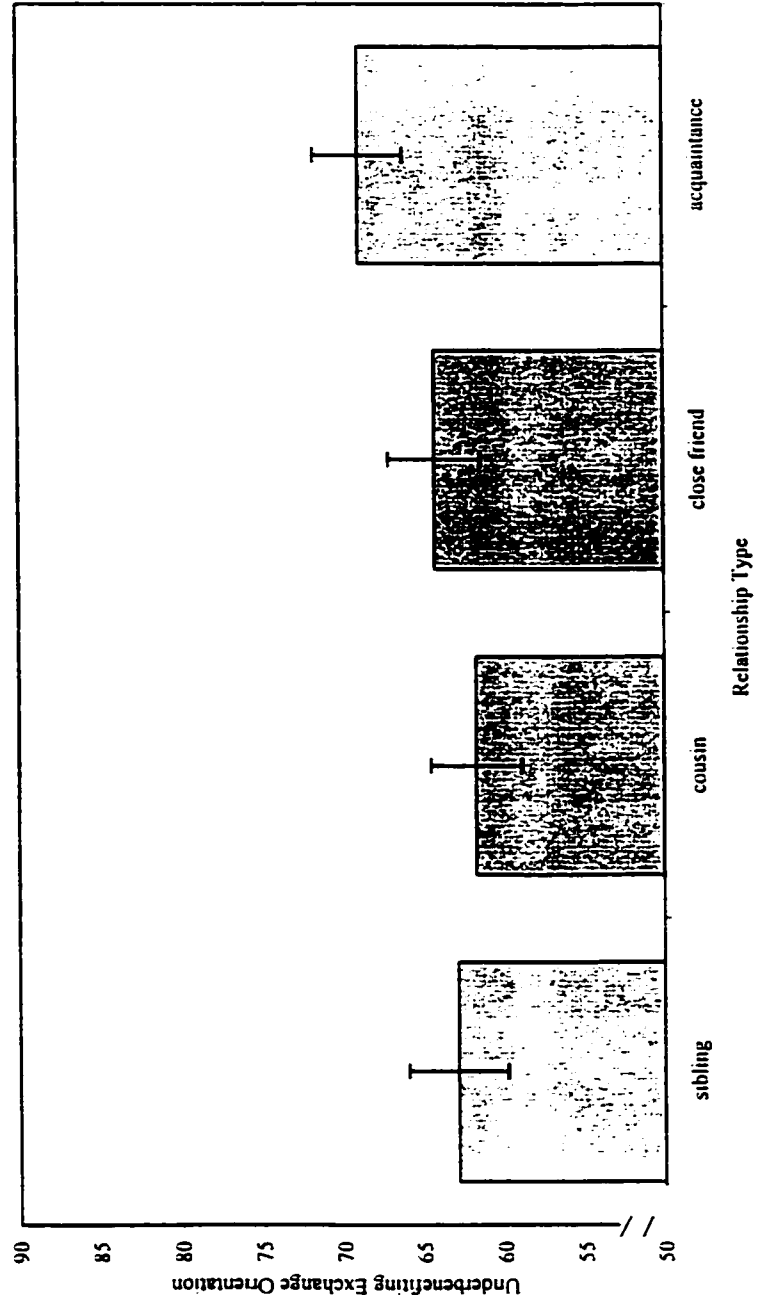


Figure 2.2. Interactive effect of relationship type and frequency of contact on Underbenefiting Exchange Orientation (UEO).

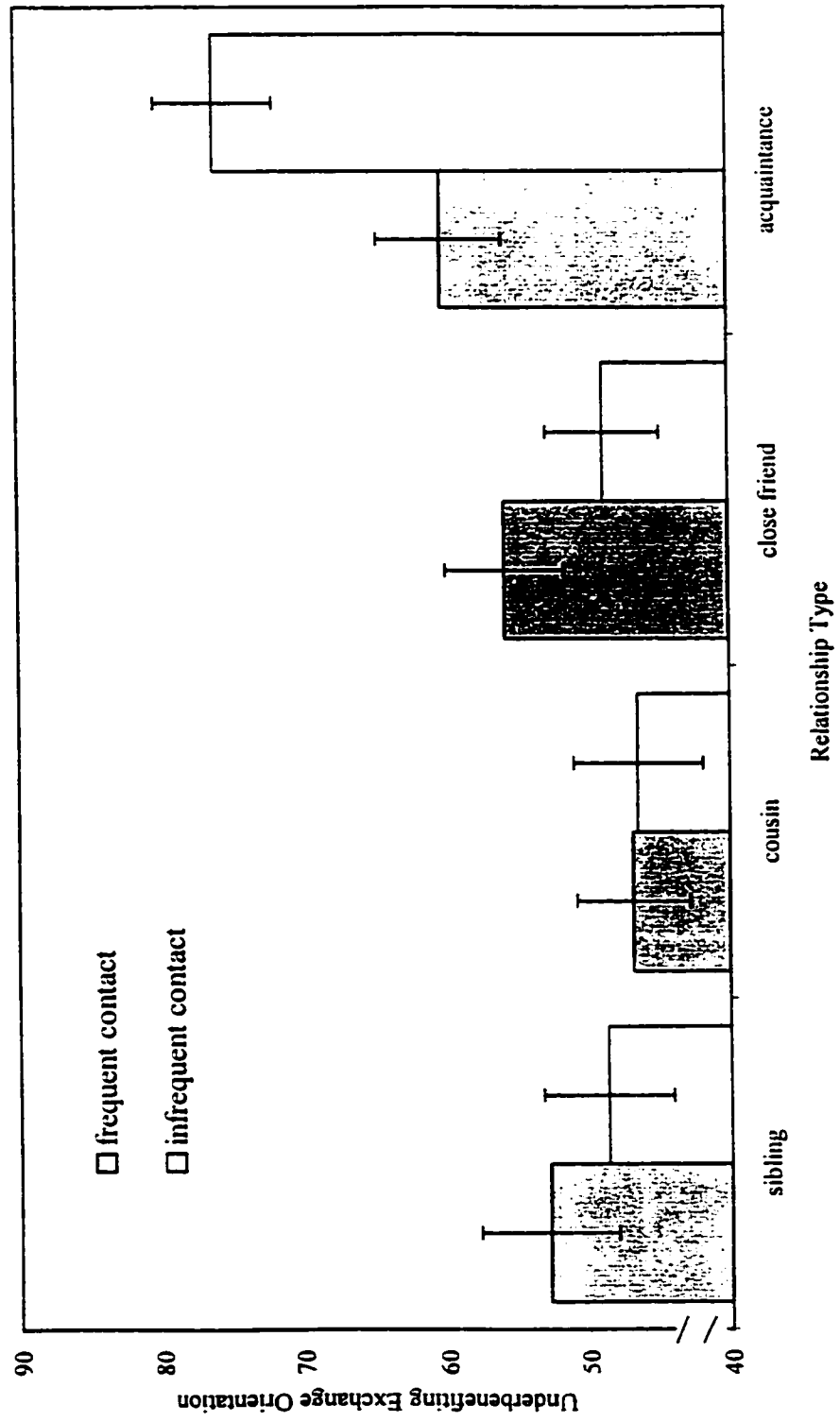


Figure 2.3. Underbenefiting Exchange Orientation (UEO) across relationships: A replication of study one.

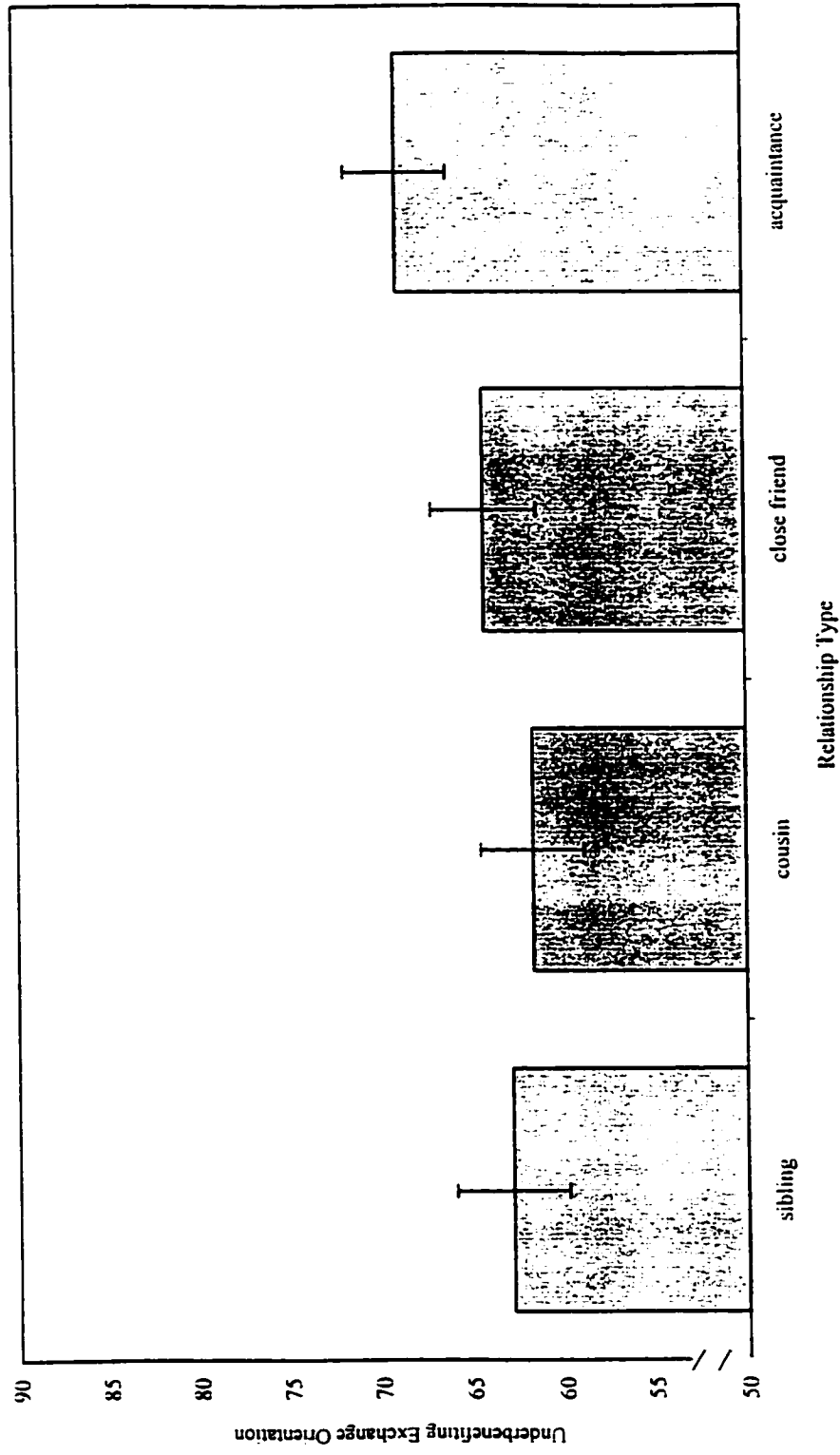
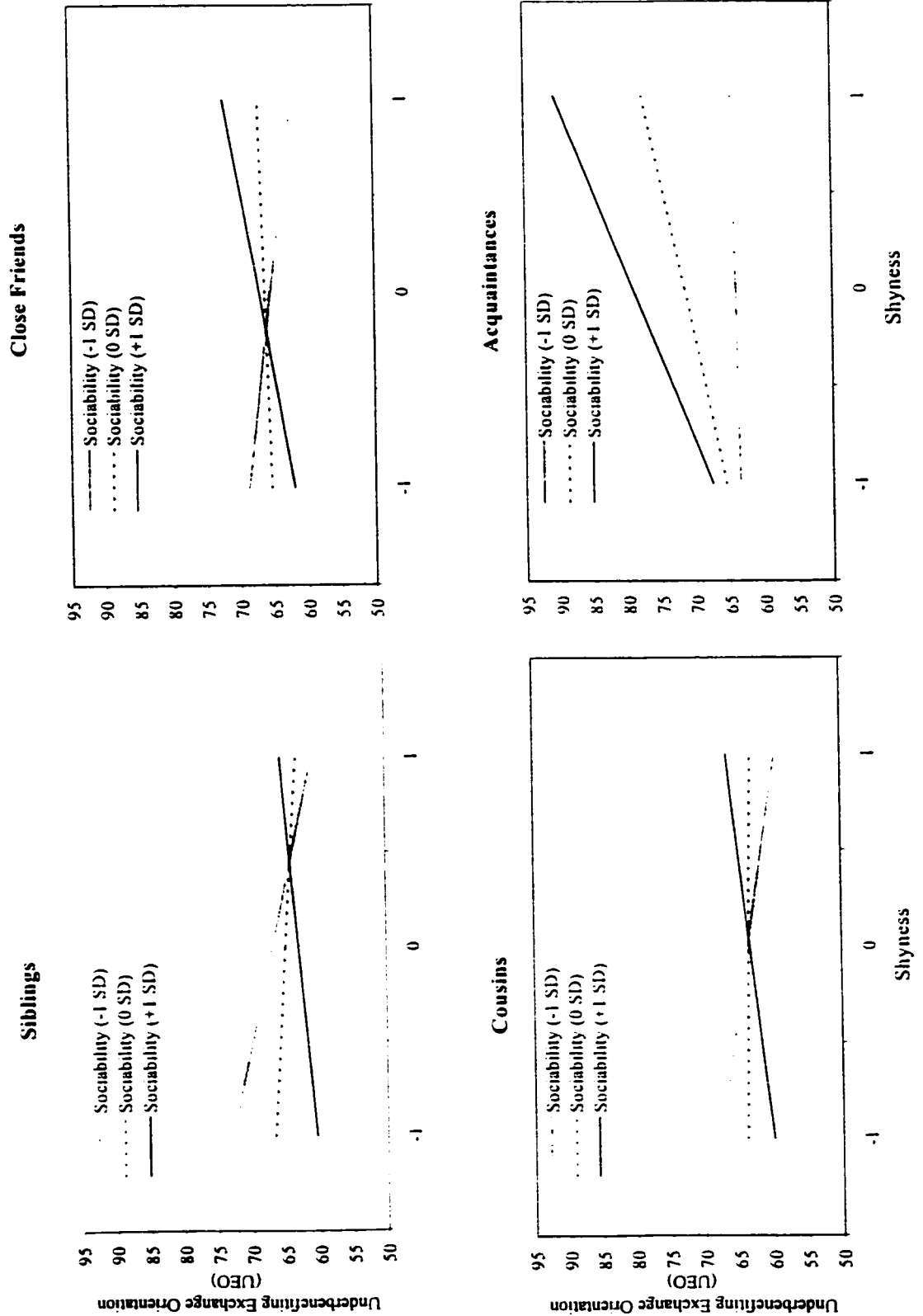


Figure 2.4. Interaction between Shyness and Sociability in predicting Underbenefiting Exchange Orientation in the four relationships.



CHAPTER III

**The Relationship between Exchange Orientation and the
Development of Same-Sex Friendships in University Residence.**

(to be submitted to *Social Psychology Quarterly*)

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Abstract

Exchange orientation has been conceptualized as a relatively stable personality construct measuring how much people want tit-for-tat reciprocity in their relationships. Substantial research has examined the association between exchange orientation and satisfaction with relationships. Some researchers have suggested that exchange orientation should predict satisfaction with friendships over time (i.e., certain exchange orientation personality types may be more or less happy with their social relationships). Others have suggested that more emphasis should be placed on the characteristics of the relationship, with the expectation that exchange orientation should be directly associated with changes in the quality of friendships. In the research reported here, first-year university students' exchange orientation scores and the quality of new friendships with a roommate and a neighbour in their university residence were measured at 9 days and 75 days after their first meeting. Contrary to popular *'stable trait'* models the results indicated that people's initial anxieties concerning reciprocation in these relationships at 9 days were hardly associated with perceived friendship quality after 75 days. Increases or decreases in concern about the expectations and obligations of reciprocation were strongly associated with their perceptions of friendship quality at time two. These findings support a *'relationship-specific characteristics'* model of exchange orientation with important implications for current conceptualizations of how exchange orientation is related to satisfaction in developing friendships.

Introduction

With more and more of the recent literature linking good social relationships to better health and quality of life (e.g., Bolger & Eckenrode, 1991; Buunk & Verhoeven, 1991; Sarason, Sarason & Gurung, 1997) it becomes more important to investigate personality characteristics and characteristics of relationships that contribute to relationship satisfaction. Although social exchange is not characteristic of all interactions, it is a ubiquitous human behavior that extends universally across human cultures (Alexander, 1979; Berkowitz & Daniels, 1963; Goranson & Berkowitz, 1966; Gouldner, 1960; Pruitt, 1968) with much evidence that sustained social relationships typically depend on perceptions of mutual benefits accruing from the association. It is not surprising that one important determinant of relationship satisfaction is the perception of a 'fair' (i.e., equitable) distribution of material and social resources (Buunk & VanYperen, 1991, 1990; Davidson, 1984; Hatfield et al, 1985; Rachlin, 1987; Schafer, Keith & Lorenz, 1984; Sprecher, 1986).

Perceptions of inequity may arise from particular failures in reciprocating, but also because of individual differences in tolerance of inequity. Some people, for example, are particularly vigilant in monitoring exchanges, and are likely to exhibit a lower threshold for tolerating failures or delays in reciprocating (Murstein & Azar, 1986; Murstein, Cerreto, & MacDonald, 1977; Sprecher, 1992, 1998). Research indicates that *Exchange Orientation*, a personality construct designed to quantify such tendencies, is associated with perceptions of relationship satisfaction and various measures of

relationship quality (Murstein & Azar, 1986; Murstein, Cerreto, & MacDonald, 1977; Buunk & VanYperen, 1990; Jones, 1991; Sprecher, 1998).

Although scholars have repeatedly shown exchange orientation to be associated with relationship quality at certain points in time (Buunk & VanYperen, 1991; Murstein & Azar, 1986; Murstein, Cerreto & MacDonald, 1977; Jones, 1991; Sprecher, 1992, 1998), there has been little evidence for a particular causal path. Many have advocated what I will refer to here as the 'stable trait' model (Murstein & Azar, 1986; Murstein, Cerreto, & MacDonald, 1977; Sprecher, 1992, 1998). According to the 'stable trait' model such tendencies should predict satisfaction with relationships over time (i.e., certain exchange orientation personality types may be more or less happy with their relationships). Others have advocated what I will refer to as the 'relationship satisfaction' model, specifying the reverse casual path (see Alessio, 1978).

Sprecher (1998) has suggested that one possible reason for the lack of evidence for the popular 'stable trait' model, suggesting that exchange attitudes predict relationship satisfaction, is that previous measures of exchange orientation combined two distinct 'exchange attitudes', each having an oppositely valenced association with relationship satisfaction. In the current study, Sprecher's revised version of the exchange orientation scale is used for the first time to examine the association between exchange orientation and quality of same-sex friendships over time. This study features a longitudinal design and, to my knowledge, is the first to examine the cross lag associations between these constructs (each variable with the other at two points in time) in the context of friendships. Murstein & Azar (1986) did examine these constructs in

same-sex friendships but failed to control for time 1 friendship scores, violating the criteria necessary for examining causal relationships in non-experimental data (Newcomb, 1995). I further argue that distinguishing two exchange attitudes is not sufficient to understand the association between exchange orientation and the quality of relationships.

In a comment on Murstien et. al.'s 1977 study, Alessio (1978) suggested that the negative association between exchange orientation and relationship satisfaction might be due to the reverse causal mechanism (i.e., relationship satisfaction is antecedent to exchange orientation). He emphasized that satisfaction with a relationship (which will change as a result of relationship dynamics such as a perceived violation of social exchange expectations) may predict whether a partner is concerned about reciprocation (i.e., exchange orientation). Alessio's comment was met with true scientific ardor, for to my knowledge, every test of the 'stable trait' model has also tested the reverse causal path (e.g., Buunk & VanYperen, 1991; Sprecher, 1998). However, as just mentioned, little evidence has been found for either.

I propose a new 'relationship-specific characteristics' model. This new 'relationship-specific characteristics' model is similar to Alessio's 'relationship satisfaction' model in that it suggests that characteristics of the relationship will influence how anxious people are that their relationships are characterized by tit for tat reciprocation. Importantly, however, this new model specifies that people's expectations concerning social exchanges differ across relationships. In this model, friendships of unrelated persons are a special class of relationships that differ from other types of

relationships like romantic relationships or kin relationships not just in the degree of intimacy and/or personal interaction, but with respect to qualitative characteristics such as kinship. Genetic relationship is an important moderator of anxieties concerning reciprocity because kin have shared reproductive interests (Hamilton, 1964; Trivers, 1971). Considering the genetic relatedness of parties, for example, suggests that indices and modulators of trust (e.g., amount of time spent together) will be more important in non-kin relationships than in kin relationships since kin have overlapping interests that are not eliminated by asymmetries in reciprocity. Chapter 2 more fully develops the argument about kinship and provides evidence that kinship modulates people's expectations about exchange orientation as defined by Sprecher.

This 'relationship-specific characteristics' model is far more dynamic than previously articulated models of exchange orientation. According to the 'relationship-specific characteristics' model, it is not the initial levels of anxiety about reciprocation that will be most important for predicting whether people will develop better quality relationships but whether *changes* in exchange attitudes occur. This conceptualization is similar to the notion that bonding, intimacy, or closeness within relationships result from the activation of psychological mechanisms that 'monitor' exchange of altruistic behaviors within sustained reciprocal relationships (Nesse, 1990; Trivers, 1971). When the result of recent social exchanges between two partners has been positive (e.g., meeting or surpassing social exchange expectations) closeness or intimacy increases whereas if recent social exchange experiences have been negative (i.e., perceived as an 'unfair' distribution) closeness in the relationship may suffer. Roberts and Sherratt (1998)

suggest that the development of cooperative relationships proceeds through social exchanges with increasing investments. The authors propose a 'raise the stakes' strategy entailing small initial investments in others and increases in investments only when previous investments are matched. They argue that this strategy allows 'testing the water' rather than taking 'sudden leaps of faith' in cooperation. Thus, friendship formation typically involves a complicated progression of social exchange interactions that requires evaluations of what others expect. According to this perspective, over time those who become closer friends become less concerned that their partners reciprocate right away. This does not mean that concern about reciprocation will necessarily always remain low after friendships develop. The monitoring of social exchange is expected to be a more dynamic process that can be affected by the outcome of recent social exchanges. Imagine a university student who is very anxious about receiving reciprocation from her new roommate. According to the 'relationship-specific characteristics' model such anxiety concerning reciprocation is understandable in a new non-kin relationship. The student does not know how committed her new roommate will be to their relationship, and therefore, some caution regarding social exchange is expected. But now imagine that three months later the student is not as anxious that her roommate return favours right away. Presumably the student has had some time to get to know her roommate, and she feels more confident in their friendship. This is expected in normal friendship development. On the other hand, if this student's anxieties actually increased and she became even more concerned that her roommate return favors, it would be more likely that her friendship with her roommate had decreased in quality. Thus according to this

model, changes in 'exchange orientation' will reflect changes in friendship quality over time, especially for new friendships. It is important to note that this model does not suggest that 'exchange orientation' is not a stable personality characteristic. What this model does suggest is that the association between exchange orientation and relationship quality is more dynamic than previous models have articulated. Before describing this new model in more detail, previous literature concerning exchange orientation will be introduced.

Previous work on exchange orientation.

The 'stable trait' model of exchange orientation.

According to Murstein, Cerreto, and MacDonald's (1977) original conceptualization, people high in exchange orientation are expected to be more aware of imbalances of reciprocity and more distressed by these imbalances than those low on exchange orientation. These high exchange-oriented individuals are expected to have a low tolerance for temporary imbalances of reciprocity in their relationships. For example, a person with a high exchange orientation score relative to someone with a low exchange orientation score might be particularly anxious about reciprocating a dinner invitation to a friend who had paid for dinner out (and about receiving an invitation back).

Furthermore, Murstein et. al. (1977) suggest that in the context of stable, sustained relationships, those with high exchange orientation are less likely to be satisfied with their relationships. They suggest that temporary imbalances of resources (both actual imbalances and perceived imbalances that may be due to biases in information

processing rather than on real resource inequities) are inevitable in relationships with extended periods of exchange of varied resources (e.g., marriage partners, cohabiting couples and same-sex roommates). According to these researchers, these imbalances will cause highly exchange-oriented individuals to be distressed and dissatisfied with their relationships, while for those low on exchange orientation such imbalances are expected to have reduced impact on relationship satisfaction. This is expected to be true whether the perceived imbalance results from being underbenefited or from being overbenefited from the relationship.

Importantly, Sprecher (1992) who has also advocated a '*stable trait*' model, has argued that one difficulty with Murstein et. al.'s original formulation was that it did not adequately distinguish between concern about *benefits owed* to others and *benefits expected* from others. The previously used scales (Murstein & Azar, 1986; Murstein et al, 1977) combined both types of questions to measure a single dimension they referred to as 'exchange orientation'. For example, Murstein & Azar's (1986) exchange orientation scale was primarily composed of items addressing people's concern about benefits expected from others (14 of 21 items) but did have several questions (5 of 21) measuring concern about returning benefits to others, and 2 items that combined both concepts. Accordingly, Sprecher (1992, 1998) defines two distinct types of exchange orientation: overbenefiting exchange orientation (OEO) and underbenefiting exchange orientation (UEO).

Sprecher (1992, 1998) refers to people's inclination to be concerned or anxious about giving more than they receive as "*underbenefiting exchange orientation*" (UEO).

Sprecher alleges that the scale measures 'concern that one is not the underbenefited partner in the relationship' (Sprecher, 1998, p. 220) which can be equated to a concern about being exploited. In contrast, she refers to people's tendencies to be anxious about returning as many benefits as they receive as "*overbenefiting exchange orientation*" (OEO) which can be equated to wanting to fulfill obligations in a relationship.

People high on underbenefiting exchange orientation (UEO) are likely to keep close track of the debts that others owe them. These people are likely to feel high levels of anxiety when they are the underbenefited partner in a relationship and they tend to expect immediate reciprocation. For example, if a high UEO person had taken a friend out to dinner s(he) might be particularly anxious to receive an invitation back.

People high on overbenefiting exchange orientation (OEO) are expected to carefully keep track of their debts to others and to experience greater levels of anxiety when they feel indebted to the other as the overbenefited partner. They have a strong sense of obligation to return favors they have received. When a friend pays for dinner out, a person with high OEO may be particularly anxious to reciprocate the favor. Sprecher suggests that, in contrast to UEO, high OEO may be positively associated with relationship satisfaction. She suggests that high OEO individuals are focused on their partners' needs and/or on pleasing others in order to maintain relationships. Alternatively one might have interpreted 'concern about fulfilling obligations in a relationship' (high OEO) to represent a person's unwillingness to be overbenefited in a relationship because s(he) does not want to be in a position that another person can 'call in' a favour. However, the positive associations between OEO and measures of relationship quality

found in the current study and by Sprecher (1998) make this alternative interpretation an unlikely explanation for the results of these particular studies.

Presumably the distinction between UEO and OEO is not based only on individual differences in tracking costs and benefits in relationships. It would seem that by definition high UEO and high OEO would require tracking of both costs incurred *and* benefits received. For example, concern about owing benefits to others certainly requires tracking benefits received but also knowledge of whether obligations have already been fulfilled or that 'outstanding debts still need to be paid'. What seems important to this distinction is that more anxiety is experienced knowing that someone owes you a favor (high UEO) or that more anxiety is experienced knowing that your obligations have not been fulfilled (high OEO).

According to some preliminary data, the distinction between UEO and OEO may prove to be an important one. Prior to Sprecher's modification of the scale, studies generally indicated that exchange orientation scores were negatively correlated with *marital* adjustment and satisfaction such that people with high exchange orientation were less satisfied with their relationships (Buunk and Van Yperen, 1991; Murstein et al 1977; Murstein and MacDonald, 1983). Using the modified scale, Sprecher (1998) found only modest negative relationships between UEO and relationship quality in dating relationships and strong positive associations between OEO and relationship quality.

The association between relationship quality and exchange orientation has not yet been investigated in other types of relationships in light of Sprecher's modifications (1992, 1998). There is only one study that uses Sprecher's modified scale in the context

of friendships (Buunk and Prins, 1998). They studied the association between loneliness and underbenefiting and overbenefiting exchange orientation in the context of close same sex friendships. They found that an index of concern about reciprocation was negatively associated with relationship processes, and furthermore, that people high on the underbenefiting exchange orientation scale were more lonely than those who scored low. However, it should be noted that their measures of loneliness were global measures and not specific to a close same-sex friendship. The first goal of this study was to assess the association between exchange orientation and friendship quality using Sprecher's (1992, 1998) modified scale to measure exchange orientation.

Exchange Orientation and Friendship Quality.

There are a few studies that have investigated the association between exchange orientation and quality of same-sex friendships using previous versions of the exchange orientation (EO) scale. Some have found EO to be negatively associated with friendship quality (Jones 1991; Murstein and Azar, 1986), but it has been positively associated with friendship quality in others (Murstein et al. 1977). In a longitudinal study, Murstein and Azar (1986) investigated these constructs in randomly assigned roommate pairs in college residences, and found that exchange orientation scores at the beginning of the school term were negatively associated with roommate compatibility 3 months later. Jones (1991) also found exchange orientation to be negatively correlated with friendship satisfaction at the same point in time (i.e., a synchronous association). This was true for male and female same-sex and opposite-sex friendships. However, in Murstein et al's (1977) initial study where college students completed the exchange orientation scale with

respect to self-selected same-sex friendships, they found a positive synchronous association between exchange orientation and friendship intensity. However, it was unclear whether the subjects answered the questions with respect to a particular friend, friendships in general, or relationships in general. To measure exchange orientation with respect to friendships Murstein et. al. simply changed any scale items that referenced 'a spouse' to 'a friend'. This left many items with a general referent (eg., "It matters if *people* I like do less for me than I do for them"). Subjects were given one copy of the questionnaire to fill out and a second copy to give to 'a friend of the same sex to fill out'. Furthermore, little information was acquired regarding the friendships. To explain the differences in the results from their studies of friends and roommates, Murstein and Azar (1986) suggested that roommates are like marital relationships because "the closeness of living together and sharing many responsibilities should lead to misperception and unhappiness with the other if the individual has high E [exchange] orientation" (p. 5). They further speculate that roommates are like marital relationships because like marriage partners, roommates engage in more or less continuous exchange of a variety of different material and social goods. Over time it is difficult to track their partner's inputs (relative to their own inputs) so they are likely to perceive that their own inputs exceed that of their partner's. For those high in exchange orientation, such perceived imbalances are expected to be distressing and result in lower relationship satisfaction.

In contrast, they suggest that exchange orientation is positively associated with relationship satisfaction in new relationships, business or acquaintance relationships (such as those purportedly studied by Murstein et. al., 1977) and may convey interest in

the other person. They suggest that among acquaintances and friends, "doing favors for each other as well as sharing expenses and responsibilities, may build a fabric of solid relationship over time" (p. 4). Murstein et. al. referred to the friendships in their 1977 study as situationally induced friendships. Unfortunately, little information was given to determine why they classified these relationships as such. Similarly, it is unclear what types of friendships comprised the Jones (1991) sample (e.g., best friends, close friends, acquaintances, or new friendships) and therefore, it is difficult to discern whether these new data supported Murstein et. al.'s hypothesis that exchange orientation would be positively associated with friendship satisfaction for friendships that have limited social contact and negatively associated with relationship satisfaction for cohabiting friends that have substantial social interactions.

To recap, according to both of the '*stable trait*' models described above, exchange orientation scores are expected to be associated with relationship satisfaction. There are two important differences between Murstein et al's original model and Sprecher's (1992; 1998) revised model. First, as described above, Murstein et. al. (1986) suggest that exchange orientation will have a negative association with relationship satisfaction for cohabiting friends but a positive association for casual friendships. In contrast, Sprecher's model does not distinguish between different types of relationships. Secondly, Sprecher's model distinguishes between UEO and OEO and predicts that these constructs will have oppositely valenced associations with relationship quality, whereas Murstein et. al. do not distinguish between these two constructs.

In the research reported here, participants' exchange orientation scores and quality of friendship were measured. Like other relationships, friendships vary in quality. Many different types of measures can be used to assess friendship quality, ranging from gross measurements such as those categorizing the friendship according to type (e.g., best friends, good friends, casual friends, acquaintances) or mutual liking (Wright, 1991) to those that measure a number of different dimensions associated with close friendships like Mendelson & Aboud's (1999) friendship questionnaires that were used to assess friendship quality in the current study. These scales measure positive feelings for the friend, satisfaction with the friendship and the extent and variety of functions that the friendship fulfills, and are thought to provide an appropriate basis for measuring friendship quality (Mendelson & Aboud, 1999). Exchange orientation and friendship quality were measured with respect to two different relationships. These were: (1) roommates in university residence (similar to Murstein et. al., 1986) and (2) neighbours in residence; both are classic examples of situationally induced relationships but also have important differences. Unlike roommates, neighbours have much more control over the amount of social interaction they will have. Roommates' living arrangements necessitate a certain amount of social interaction and intimacy. Even roommates who don't get along are obliged to have some social interaction unless they decide to go through the arduous procedure involved in changing roommates. According to Murstein et. al., this difference in the amount of social interaction will lead to differences in the association of exchange orientation and relationship quality. Exchange orientation (both UEO and OEO) should be positively correlated with perceived friendship quality for

neighbours but negatively correlated with friendship quality for roommates. In contrast, according to Sprecher's (1992, 1998) revised exchange orientation theory, which does not explicitly distinguish between different types of relationships, UEO should be negatively associated and OEO positively associated with friendship quality in both roommate and neighbour relationships.

Is Exchange orientation the cause or the effect of friendship quality?

As just described, the 'stable trait' perspective suggests that exchange orientation should predict satisfaction with relationships over time (e.g., time 1 UEO and OEO predict time 2 relationship satisfaction). Alternatively, Alessio (1978) pointed out that a perceived imbalance of personal investment relative to partner's investment can create dissatisfaction (or uncertainty) which then may result in increased tracking of reciprocation and/or expectations of reciprocation (i.e., what personality researchers have referred to as high exchange orientation). According to this 'relationship satisfaction' model the exchange orientation scale is viewed as a tool for measuring expectations of reciprocity in particular relationships based on perceptions of imbalances in reciprocity rather than measuring a personality construct. Every study investigating the relationship between exchange orientation and relationship satisfaction has, to my knowledge, tested both causal paths. Yet, as will become clear below, studies have found little support for either.

There have been two studies that can be scrutinized to assess the directional path between exchange orientation and friendship quality, each using a longitudinal design. Both studies have investigated romantic relationships. The first test of the causal

relationship between exchange orientation and relationship satisfaction was conducted by Buunk and VanYperen (1991) who calculated partial correlations between exchange orientation and marital satisfaction at time 2, controlling for exchange orientation at time 2, and between exchange orientation and marital satisfaction at time 2, controlling satisfaction at time 1. They found no evidence for either causal relationship. The second test of the causal path was conducted by Sprecher (1998) using her modified exchange orientation scale. She used a cross lag regression between (1) exchange orientation at time 1 and relationship satisfaction at time 2, controlling for relationship satisfaction at time 1, and (2) between relationship satisfaction at time 1 and exchange orientation at time 2, controlling for exchange orientation at time 1. As mentioned earlier, Sprecher (1998) suggested that one possible reason for the lack of evidence for the popular 'stable trait' model that exchange attitudes predict relationship satisfaction is that previous measures of exchange orientation combined UEO and OEO with each scale having an opposing correlation with relationship satisfaction. Yet, using the modified EO scale, Sprecher (1998) also found no evidence for either causal direction in dating relationships over a 6-month period. Thus, despite the fairly consistent associations found between the two constructs at the same point in time, the results of the two longitudinal studies have provided no evidence for either of the causal explanations suggested thus far.

A 'relationship specific characteristics' model.

The central goal of the current study was to examine a heretofore unexplored hypothesis. Despite the lack of evidence for a causal relationship between exchange orientation and relationship quality in the research thus far, there may be an important

association between these constructs that has not yet been investigated, namely, that *changes* in expectations of reciprocity may be associated with perceived quality of friendships. According to evolutionary models, friendships differ in important ways from other types of relationships (e.g., marital and kin relationships). Qualitative characteristics of relationships, extending beyond quantitative differences in social interaction and intimacy, make it important to specify the type of relationship being examined, hence the specification of a 'relationship-specific characteristics' model here. For example, reciprocation of benefits is expected to be more important in friendships than in kin relationships. According to Hamilton's theory of inclusive fitness (Hamilton, 1964), people are expected to help their kin without expectation of reciprocation when an individual's gain through inclusive fitness is sufficiently large to offset individual loss in direct fitness (i.e., when $c < rb$). Such 'one-sided' transactions will be 'selected' whether reciprocated or not.

According to the theory of reciprocal altruism (Trivers, 1971), social exchange between genetically unrelated individuals is expected to occur only when there is a high probability that the benefits bestowed upon others will be reciprocated at some time in the future. In new relationships where one typically has little knowledge about an exchange partner's intention of reciprocating, people are expected to be more cautious, make smaller investments, and be vigilant with respect to tracking reciprocation (Roberts & Sherrats, 1998). In friendships, trust develops in the friend's intention to give help at some time in the future, if needed (Tooby & Cosmides, 1996). This confidence in reciprocity is expected to be accompanied by reduced

monitoring of reciprocity and greater tolerance for temporary imbalances of social exchange.

Therefore, according to the *'relationship specific characteristics'* model presented here, expectations of reciprocation (UEO) and one's sense of obligation to reciprocate with others (OEO) are expected to vary systematically in different types of relationships. Those who are more closely related are expected to be less concerned about reciprocation than are more distantly related or genetically unrelated individuals. In contrast, among non-kin, the perception that reciprocation will occur should always be important for decisions to invest in the relationship. Relationship characteristics that influence perceptions of the probability that reciprocation will occur are expected to be especially important in non-kin relationships. The present study does not test hypotheses as to how expectations of reciprocation will vary in relation to kinship (see Addison, Chapter 2). The importance of kinship in modulating expectations about reciprocity has substantial effects in modulating exchange orientation. It is important to note that the model presented here may be too simplistic. According to this model even very close friends will expect reciprocation, although unlike new relationships, close friends are expected to feel comfortable with a longer time delay before reciprocation occurs. However, some have argued (Tooby & Cosmides, 1996) that reciprocation may be unnecessary in some relationships because investment in the relationship can act as an 'insurance policy' in case help may be needed at some time in the future. However, even in this situation one would expect that if the friend did not help in 'a test of the insurance policy' there would be negative consequences for the relationship.

The present study of the friendship quality of unrelated persons -- neighbours and room-mates -- is derived from this '*relationship-specific characteristics*' model. What is highlighted is the importance of *changes* in expectations concerning reciprocation from a social exchange partner as a relationship develops. Previous tests of the '*relationship satisfaction*' model (e.g., Buunk & VanYperen, 1991; Sprecher 1998) did not examine *changes* in UEO or OEO, only the cross-lag association between relationship satisfaction at time one and exchange orientation at time 2.

The '*relationship-specific characteristics*' model is distinguished from the static '*stable trait*' model but is similar to the dynamic '*relationship satisfaction*' model in emphasizing relationship experiences that are expected to modulate UEO and OEO. The '*relationship-specific characteristics*' model is a further revision of the relationship-satisfaction model by suggesting the kinds of variables that are expected to affect relationship-satisfaction and exchange orientation. These variables would include kinship, frequency of interaction, asymmetries in benefits and costs of interactions, and other features of both parties that affect the value of maintaining the relationship for both parties. According to this revised model, in new non-kin relationships one might expect vigilant tracking of reciprocation (high underbenefiting exchange orientation UEO), but as friendship develops with repeated satisfactory social exchanges, anxiety about reciprocity should decrease. This reasoning suggests that changes in UEO would be negatively correlated with the quality of the relationship after there has been enough social interaction to predict the partner's reliability (or unreliability) as a social exchange partner. Thus, in the present study changes in underbenefiting exchange orientation

(UEO) are expected to be negatively correlated with positive feelings of friendship for *both roommate and neighbour relationships*. In addition, initial levels of UEO might be positively correlated with poor first impressions. With respect to OEO, people who increase in their willingness to fulfill obligations to friends (high OEO) may be more inclined toward maintaining these friendships by being vigilant in benefiting friends. This reasoning suggests that changes in OEO would be positively correlated with quality of relationship in "proven" friendships. In addition, for new relationships people might also be concerned about giving back to others in order to provide assurance of one's good intentions, which suggests that OEO would be positively correlated with quality of first impressions of the relationship in new friendships.

The second goal of the present paper was to see which of the different models of exchange orientation -- (1) Murstein et. al.'s 'stable trait' model, (2) Sprecher's 'stable trait' model, (3) the relationship-satisfaction model, or (4) the 'relationship-specific characteristics' model-- would be best supported in the context of new same-sex friendships and acquaintanceships.

The present study

In the research reported here, first-year university students' exchange orientation and quality of friendships with a roommate and a neighbour were measured at 9 days and 75 days after their first meeting. Subjects were asked how they would feel about each of the social exchange situations described in the exchange orientation scale (UEO and OEO) in relation to these two individuals in order to measure the subjects' reciprocity anxieties in each relationship. Since this scale includes a variety of different types of

social exchange situations the scale score can be conceptualized as a general tendency to feel anxious when underbenefited or overbenefited with respect to the particular person.

Due to the longitudinal nature of the study, subjects completed the exchange orientation questionnaire at two times, which raises the possibility that testing during phase one might cause changes in measurements taken during phase 2. Therefore, I also included a 'control' group who did not complete the exchange orientation or the friendship quality questionnaires during the first testing so this possibility could be addressed by comparing the time 2 scores of the focal group and control group.

Methods

Overview of Design

Subjects were recruited from an introductory psychology class at McMaster University and received course credit for their participation. Their average age was 19 years (ranging from 17-23).

Participants were selected if they (1) were living in a McMaster dormitory with one other (same-sex) student that they did not know prior to their residence placement, and (2) were willing to participate in both phases of the study. Ninety-one students participated in phase one which occurred approximately 9 days after first meeting their roommates. Ninety-four percent of these students returned to participate in phase two which occurred about two and a half months later. All analyses are limited to the eighty-six students who participated in both parts of the study.

During phase 1 the eighty-six participants (49 males and 37 females) were randomly assigned to one of two groups: 'focal' or 'control'.

The Focal group. Two thirds of the participants (32 male, 25 female) were assigned to the 'focal' group. The purpose of the focal group was to examine the relationship between exchange orientation and friendship quality over time. Participants were asked questions about their relationships with their roommates and also about their relationships with one same-sex neighbour in residence, who was selected by asking the subjects to "choose a neighbour from across the hall or next door in residence that you didn't know before you moved in to residence this year". In phase two they were instructed to choose the same neighbour they had answered questions about in phase 1. However, 19 of the 57 subjects in the experimental group referred to a different neighbour in phases one and two. Thus, data from only 38 of the 57 subjects could be used for analyses of the neighbour relationships. Possible selection biases will be discussed later. Fortunately, all subjects did refer to the same roommate in both phases. For both relationships the focal group completed Sprecher's (1998) exchange orientation scale, the McGill Partnership scale (Mendelson & Aboud, 1999a; 1999b), the McGill Friendship scale (Mendelson & Aboud, 1999a; 1999b), several other questions measuring current relationship dynamics, and some demographic information (e.g., sex, age) during phase one and phase two testing. The order of presentation of the scales for neighbour and roommate was counterbalanced at both times. For the experimental group, order of presentation for the exchange orientation scales (UEO and OEO) for roommates and neighbours was counterbalanced both at phase one and phase two. Approximately equal numbers of participants completed each of the four possible combinations.²

² There were four possible combinations: For 15 subjects the order of presentation was the following,

The Control group. 17 men and 12 women were assigned to the 'control' group. As mentioned earlier, this group was included in order to examine effects of repeated testing (i.e., any effects that completing the exchange orientation scales at the first visit may have had on scores at visit two). These participants did not complete the exchange orientation or friendship quality scales during the first phase. Instead, they completed several personality scales (unrelated to the hypotheses of the current study). During phase two they completed the same scales as the focal group.

Procedure

The procedures were similar for both phase 1 and phase 2 unless otherwise indicated. Questionnaire booklets were randomly distributed among small groups of 5-10 students. Participants completed the paper-and-pencil task after reading the following instructions: "On the following pages you will be asked some questions about some of your relationships... You may be asked questions about things you haven't done before. Try to imagine how you would behave if you were in that situation." The experimenter told the subjects that all their responses would be kept anonymous. Subjects wrote a secret code at the top of their phase one and phase two questionnaire booklets so that the time 1 and time 2 answers could be identified later for data analysis. The entire task took about 45 minutes (for both focal and control groups).

phase one: neighbour/roommate - phase two: neighbour/roommate; for 13 phase one: neighbour/roommate - phase two: roommate/neighbour; for 15 phase one: roommate/neighbour - phase two: neighbour/roommate; and for 14 phase one: roommate/neighbour - phase two: roommate/neighbour. For the control group, 16 participants completed UEO and OEO in the context of the neighbour relationship in phase one and then with respect to the roommate in phase two, 13 subjects in the 'control' group completed roommate before neighbour.

Dependent variables.

Exchange orientation. Each participant completed Sprecher's (1998) underbenefiting exchange orientation (UEO) and overbenefiting exchange orientation (OEO) items with respect to the roommate and again with respect to the neighbour in residence. At the outset of the task participants were given the following instructions: "Please take a moment to think about your new roommate [or same-sex neighbour] in residence. Think about the way he/she looks and some of the things that you know about him/her. When you are ready, answer each of the following questions in relation to this roommate [neighbour]. You may not know your roommate [neighbour] very well yet, but try to answer the questions based on how you feel about your roommate [neighbour] so far." Previous studies measuring exchange orientation used scales with a majority of scale items having a general referent (e.g., I usually do not forget if *someone* owes me a favor) and a few items that referenced different types of relationships (e.g., a friend, a neighbour, or partner). In the present study the scales were revised so that the referent in each of the items was appropriate for the particular relationship context (e.g., 'I usually do not forget if I owe my *roommate* a favor' or 'I usually do not forget if I owe my *neighbour* a favor'). A seven-point scale anchored by 7 = '*sounds very much like me*' and 1 = '*sounds not at all like me*' accompanied each item. Two of the 20 items of the UEO and OEO scales referenced situations specific to mating relationships, so these items were deleted. The final UEO and OEO scores were created by computing the average of the respective scale items. The exchange orientation scale is appended (Appendix A, i).

Table 3.1 presents Cronbach's alphas for the measures at Times 1 and 2, as well as the test-retest reliability measures. Both of the exchange orientation scales have high internal consistency but lower test-retest reliabilities, suggesting that these phenomena do fluctuate over time. The internal consistency values for the OEO and UEO scales reported here are similar to those obtained by Sprecher (1998) but the test-retest reliability measures were somewhat lower here (Sprecher's 1998 values ranged from $r = 0.77, N=97$ to $r=0.60, N=92$). This is understandable considering that Sprecher investigated relationships between romantic partners that had been dating for an average of 18.7 months at the time of the first testing whereas the subjects in the present study had known their roommates and neighbours for an average of 9 days. And, according to the logic of the 'relationship satisfaction' model and the 'relationship-specific characteristics' model, one should expect more variability between time 1 and time 2 measures for new relationships in a university residence than established relationships like those of marital partners or long-standing friends.

 Insert Table 3.1 about here

Friendship Quality. Perceived quality of friendship between roommates and neighbours was assessed with three instruments: The McGill Friendship Scale, the McGill Partnership Scale, and a single item concerning roommate compatibility. The first scale was designed to measure perceived affect toward a friend, the second measures benefits derived from the friendship, and the third measures perceived compatibility with respect to their living arrangements. Both the friendship scale and the partnership scale

(see Appendix A, iii and iv) have been shown to differentiate between levels of friendship (e.g., best friends and casual friends). The compatibility score is a special item designed particularly for friends who live together (or in close proximity as did the neighbours in the present study). Since close adult friendships vary considerably not only with respect to affect but also with respect to utility, I thought relationship quality would be best represented by measuring these different aspects of friendship. Although the three measures are conceptually distinct, taken together I expected them to reflect overall friendship quality (see also Mendelson & Aboud, 1999a, 1999b).

The McGill Friendship Scale. This 16-item scale was designed to measure levels of perceived affection for a friend and satisfaction with the friendship (e.g., "I am glad that ____ is my friend," "I am pleased with my friendship with ____"). Responses are on a 9-point scale (-4 to 4) on which 5 points are labeled (-4 = very much disagree, -2 = somewhat disagree, 0 = neutral, +2 = somewhat agree, and +4 = very much agree). A higher score always indicated more positive feelings towards the friend. The subjects' relationships with their roommates and neighbours were new and just beginning to develop at the time of the first measurement. Therefore, subjects were asked to circle "Neutral" for any items that they felt they could not answer because they had not yet had enough time to make a good assessment of the roommate or neighbour. The final scores on the McGill friendship questionnaire were created by computing an average score for the 16 items. Internal consistency and test-retest reliability were good (see Table 3.1).

The McGill partnership scale. I included this scale to measure the subjects' perceptions of the benefits of their friendships (e.g., "_____ is fun to sit and talk with",

"_____ makes me feel better when I am upset", "_____ would help me if I need it". This 30 item scale was designed to measure 6 different friendship functions (i.e., reliable alliance, stimulating companionship, help, intimacy, self validation, and emotional security) associated with affection/satisfaction toward a friend, and to distinguish between friends and non-friends. Each item is a positive statement about a specific friend. The respondent indicated "how often the friend is or does what the item says" on a 9-point scale (ranging from 0-8), on which 5 points were labeled (0 = never, 2 = rarely, 4 = once in a while, 6 = fairly often, and 8 = always). Again, if subjects felt they could not answer questions because they did not yet know their roommates or neighbours, they were instructed to indicate "don't know yet" by writing "DK" in the blank space at the beginning of the item. The final scores on the McGill partnership scale were created by computing the average of the items answered across all 6 functions. As can be seen from Table 3.1, the internal consistency and test-retest reliability for this scale were good.

Compatibility. I also included a question to measure subjects' perceived compatibility with the roommate and neighbour. This question was similar to Murstein & Azar's (1986) roommate compatibility rating. Subjects were asked: "How compatible are you and your roommate [neighbour]?" Subjects indicated their response on a 7 point Likert scale ranging from 1 = "S(he) is the worst roommate [neighbour] ever" to 7 = "S(he) is the best roommate [neighbour] ever". Murstein et. al., (1986) had a test-retest reliability of $r=0.50$ after three months (for 81 roommate pairs). In the current study the test - retest reliability after two and a half months for roommates was somewhat higher

than that of Murstein et. al., at $r=0.61$, $p<.001$ ($N = 57$). The test-retest reliability was substantially lower for neighbours ($r=0.36$, $N=38$), but still significant at the .05 level.

The correlations among the three instruments were high and significant at both test phases. For roommates the correlations ranged from $r=.72$ to $r=.87$ at phase 1 and from $r=0.73$ to $r=.89$ at phase two. For neighbours the correlations ranged from $r=.50$ to $r=.79$ at phase one and ranged from $r=.55$ to $r=.68$ at phase two. Given these correlations and the conceptual similarity among the three measures, the scores on each measure were standardized, and their average was then treated as an overall measure of Friendship Quality.

Data Analyses

I was interested in examining whether the data supported 1) a 'stable trait' model suggesting that exchange orientation scores at time one would predict friendship quality at time two, 2) the 'relationship satisfaction' model suggesting that the causal direction should be reversed such that friendship quality at time one would predict exchange scores at time two, and 3) a new 'relationship-specific characteristics' model suggesting that changes in exchange orientation would predict friendship quality at time two. First, preliminary information on the variables is presented including 1) mean levels of friendship quality and exchange orientation over the two and a half month period, and 2) a comparison of these variables for the control and focal groups. Following this preliminary information, analyses for each of the three models are presented separately. Pearson's correlations between the predictors and the dependent measures are presented to look at the direction and strength of associations, and multiple regression analyses are

presented to determine the unique contributions of each of the variables to predicting changes in friendship quality. Each predictor's unique contribution (i.e., that not shared with any other predictors) to the dependent variables was assessed by change in R-squared and by Beta coefficients (Cohen & Cohen, 1983).

For each model, the regression analysis was conducted for 1) 57 same-sex roommates (32 male, 25 female) and 2) 38 same-sex neighbours (22 male, 16 female) in university residence. The regression analyses were conducted in the following way: For each regression analysis the order of EO scale presentation (roommate, neighbour) at time 1 and time 2, and the interaction between the two orders of presentation were force-entered as 'control' variables in the first step. Since interaction terms were included in the regression analyses; all variables were standardized. Interaction effects were represented by calculating the cross product of standardized scores.

Testing the 'stable trait' model. The regression analysis was conducted with the participant's friendship quality score at time 2 as the dependent variable. Friendship quality at time 1 was 'force entered' as a control variable in step 2. To examine the unique contributions of each of the exchange orientation scales, UEO at time 1 and OEO at time 1 were force-entered into the equation at steps 3 and 4, respectively.

Testing the 'relationship satisfaction' model. Previous research (Buunk & VanYperen, 1991; Sprecher, 1998) has tested this model by looking at the association between relationship satisfaction at time 1 and exchange orientation at time 2. For this analysis there were two dependent variables: subject's UEO and OEO scores at time 2, and 75 days after they had met. For the analysis of UEO, time 1 UEO was 'force-

entered' as a control variable in step two. For OEO, time 1 OEO was 'force-entered' as a control variable at this step instead. The predictor variable of interest, Friendship Quality at time 1, 9 days after they had met, was added to the equation in the final step of the regression.

Testing the 'relationship-specific characteristics' model. Finally, to examine changes in exchange orientation, according to the 'relationship-specific characteristics' model, two sets of regression analyses are presented. The first regression analysis is similar to the one used to test the 'stable trait' model except that changes in UEO and changes in OEO were added to the regression equation in two distinct steps of the hierarchical regression. This regression analysis was included so that the reader could see what happens when changes in UEO and changes in OEO are simply added to the previous regression models. However, a second set of regression analyses is also presented. This second analysis includes time 2 UEO and time 2 OEO in the model as control variables (instead of time 1 UEO and time 1 OEO). These analyses allow a test of whether or not changes in UEO and changes in OEO are important for predicting friendship levels over time beyond the most recent exchange scores. In the first set of analyses one might have argued that the change scores simply reflected the most recent levels of UEO and OEO and not the unique prediction added by changes in these measures. The regression results for the three models are presented in Tables 3.3 ('stable trait' model), 3.4 ('relationship satisfaction' model), and 3.6A and 3.6B ('relationship-specific characteristics' model).

Results

Preliminary information on the exchange scores and friendship quality.

Were there changes in Friendship Quality? To examine changes in the mean levels of friendship quality over the two and a half months, I examined the unstandardized friendship aggregate score (computed by aggregating the unstandardized average scores for each scale). For roommates, friendship quality actually decreased significantly over time (phase 1: $M = 11.62$, $SD = 4.70$; phase 2: $M = 10.24$, $SD = 5.86$; $t(56) = 2.16$, $p < .05$). For neighbours there were no significant changes in friendship quality over time (phase 1: $M = 12.10$, $SD = 4.78$; phase 2: $M = 12.99$, $SD = 3.79$; $t(37) = .66$, $p > .05$). Nineteen percent of subjects indicated a decline in roommate friendship quality by 1 standard deviation or more (and 13% reported such a decline for neighbours), and 4% of roommates (and 8% of neighbours) indicated an increase in friendship quality by one standard deviation or greater. In addition, correlations between changes in friendship with neighbours and changes in friendship with roommates were low and non-significant ($r = -.034$, $N = 38$, $p > .05$) indicating that subjects who became better (or worse) friends with their roommates did not necessarily also become better (or worse) friends with their neighbour. The overall decrease in roommate friendship quality and lack of change for neighbours are not particularly surprising given that roommates were randomly assigned and that both of these relationships were to some extent based on propinquity rather than being self-selected, based on the subject's affect and/or positive evaluations.

Were there changes in exchange orientation? Mean overbenefiting exchange orientation scores (i.e. concern about reciprocating others' favours) did not change

significantly over time for roommate (phase 1: $M= 5.50$, $SD = .69$; phase 2: $M=5.36$, $SD = .76$; $t(56)=1.68$, $p>.05$) or neighbour (phase 1: $M= 5.25$, $SD = .54$; phase 2: $M=5.39$, $SD = .67$; $t(37)=-1.28$, $p>.05$) relationships. Sixteen percent of subjects indicated an increase in roommate OEO by 1 standard deviation or more (and 5% did so for neighbours), while 9% of subjects' OEO scores for roommates (and 26% for neighbours) decreased by one standard deviation or more. Similarly, mean underbenefiting exchange orientation (UEO) scores at time 1 (Mean= 4.15 , $SD = .90$ for roommates; mean= 3.86 , $SD = .82$ for neighbours) did not differ significantly from those at time 2 (mean 4.20 , $SD = 1.00$ for roommates; mean= 4.01 , $SD = .86$ for neighbours) for roommates ($t(56)=-.41$, $p>.05$) or for neighbours ($t(37)=-1.38$, $p >.05$). Sixteen percent of subjects showed an increase in UEO score for roommate by 1 standard deviation or more (and 21% for neighbours), while 7% showed a decrease for roommates (and 10% for neighbours) by one standard deviation or more. Changes in UEO were not correlated with changes in OEO for roommates ($r=-.110$, $N=57$, $p >.05$) or neighbour relationships ($r=0.01$, $N=38$, $p >.05$) indicating that those subjects who became more (or less) concerned about receiving favours did not necessarily also become more (or less) concerned about returning favors.

Comparing the Focal and Control groups. To investigate possible effects of phase 1 testing, ANOVA's were used to compare the control and focal groups on several variables. Focal subjects were more concerned than controls about receiving reciprocation from their roommates and neighbours two and a half months later: the ANOVA showed that underbenefiting exchange orientation (UEO) scores were significantly higher for the focal group than for the control group at time two. This was

true for both roommate [control: $M= 3.29$, $SE = .20$; focal: $M=4.20$, $SE = .14$; $F(1,86)=14.38$, $p<.001$] and neighbour relationships [control: $M= 3.44$, $SE = .17$; focal: $M=4.01$, $SE = .15$; $F(1,67)=6.43$, $p<.05$]. However, there were no differences between the focal and control groups on the phase two overbenefiting exchange orientation (OEO) scores nor friendship quality scores for roommates [for OEO, $F(1,86)=.04$, $p=.85$; for friendship quality, $F(1,86)=.32$, $p=.58$] or neighbours [OEO, $F(1,67)=.66$, $p=.42$; friendship quality, $F(1,67)=.87$, $p=.35$]. Therefore, the effects of the phase 1 testing seem to have been confined to differences in UEO scores. One of the hypotheses of this study is that changes in exchange orientation will be associated with changes in friendship quality. Yet, the increased UEO scores seemingly caused by phase one testing with UEO were not associated with corresponding changes in friendship quality.

The 'Stable Trait' Model: Exchange Orientation as a predictor of Relationship Quality.

Table 3.2 presents Pearson correlation coefficients for overbenefiting and underbenefiting exchange orientation and friendship quality for both roommates and neighbours at both times 1 and 2. As shown in Table 3.2, all eight OEO scores were positively related to relationship quality; four reached significant levels, and one was almost so. Higher OEO scores within a particular relationship were associated with increased friendship quality for that relationship. This was true for measurements taken at time 1 and for measurements taken at time 2. With respect to underbenefiting exchange orientation (UEO) for neighbours the coefficients are directionally consistent and negatively correlated with subjects' perceived friendship quality at time 1 and time 2: Two of the four correlations reached significant levels and one was marginally

significant. Subjects who were most concerned about being underbenefited by their neighbours indicated poorer quality friendships with neighbours. With respect to the roommate relationship, the only significant association was the positive correlation between UEO at time 1 and relationship quality at time 2.

Insert Table 3.2 about here.

Testing 'Stable Trait' Models: Multiple regression analysis.

As mentioned above, some researchers have suggested that exchange orientation scores (UEO and/or OEO) measured at time 1 predict friendship quality over time. According to Murstein et al's (1986) original conceptualization of exchange orientation, UEO is expected to be positively associated with friendship quality for neighbours and negatively associated with roommate friendship quality. Sprecher's revised exchange orientation theory predicts a negative association between UEO and friendship quality and a positive association between OEO and friendship quality with no distinctions regarding the kind of relationship. Pearson correlations between EO at time 1 and friendship quality at time 2 (table 3.2) showed only one significant relationship: UEO scores at time one were positively associated with roommate friendship quality at time 2. This is not what would be predicted from model 1, but the exact opposite. Multiple regression analyses were conducted to determine if the combined effects of UEO and OEO would be predictive of friendship quality over time.

The results of this regression analysis are shown in Table 3.3. The main predictor of friendship quality at time 2 was friendship quality at time 1. This was true for both

roommate and neighbour relationships (standardized Beta coefficient = .602, $p < .001$ for roommates; standardized Beta coefficient = .620, $p < .001$ for neighbours). Overall EO attitudes at time 1 had little effect on changes in the quality of friendships between roommates and neighbours. The one significant effect that did emerge was that UEO scores at time 1 predicted perceptions of roommate friendship quality at time 2 (standardized Beta coefficient = .268, $p < .05$). However, as can be seen in Table 3.2, this association is positive, not the negative association predicted by model 1. This second result was also recently reported by Sprecher (1998). Sprecher found that UEO scores at time one were positively related to friendship at time 2 for males. No significant sex differences were found for the current results when the interaction between subject sex and UEO scores at time 1 are included in the analyses (controlling for subject sex at a previous step). Overall, these results provide some support for a model suggesting that exchange attitudes predict differences in perceived quality of friendship but the association is in the opposite direction to that implied by the popular '*stable trait*' models.

Insert Table 3.3 about here.

The 'Relationship Satisfaction' Model: Relationship Quality as a predictor of Exchange Orientation.

Testing Model Two: Multiple regression analysis. Model 2 stated that perceived Friendship Quality at time 1 would predict exchange attitudes at time 2. Pearson correlations (Table 3.2) indicated that there was a significant negative correlation between perceived Friendship Quality for neighbours at time 1 and UEO for neighbours

at time 2. There was also a significant positive association between friendship quality at time 1 and OEO at time 2 for roommates. However, the regression analyses indicated that after exchange orientation scores at time 1 were entered into the regression equation, relationship satisfaction at time 1 did not predict exchange orientation scores at time 2 (see Table 3.4). For both relationship categories, the major predictor of a subject's exchange orientation score at time 2 was his or her exchange orientation score at time 1. This was true for UEO and for OEO. Therefore, no support was found for the 'relationship satisfaction' model.

Insert Table 3.4 about here.

The 'Relationship-Specific Characteristics' Model': Changes in Exchange Orientation as predictors of Relationship Quality.

The purpose of this set of analyses was to determine whether changes in exchange attitudes were predictive of subjects' perceived quality of friendship with their roommates and neighbours. Table 3.5 shows Pearson correlations between perceived friendship quality after two and a half months and changes in overbenefiting scores from time 1 to time 2 (OEO at time 2 – OEO at time 1) as well as changes in underbenefiting exchange orientation (UEO time 2 – UEO at time 1) with respect to roommates and neighbours. As expected, when UEO scores were higher after 2.5 months the friendship quality was poor, and this was a significant negative correlation for roommates and nearly so for neighbours. Furthermore, when OEO scores were higher after 2.5 months the friendship

quality was good, and this was a significant positive correlation for both roommates and neighbours.

Insert Table 3.5 about here.

Testing the 'relationship-specific characteristics' model: Multiple regression analyses. The data in Table 3.5 indicated fairly strong correlations between the predictors (changes in UEO, changes in OEO) and the dependent measure (perceived friendship quality at time 2). Multiple regression analyses were conducted to determine if each of these variables contributed significantly (and uniquely) to predicting the dependent measure.

Two sets of analyses are presented. Table 3.6A shows the results of the first regression analysis. This analysis is identical to that used to test the '*stable trait*' model except that there are two additional predictors (changes in UEO and changes in OEO) added in two final steps. This regression analysis indicates that above and beyond time 1 UEO and time 1 OEO scores, changes in UEO and changes in OEO significantly and uniquely predict perceived friendship quality after the 2 and a half-month interval. This was true for both roommate and neighbour relationships. However, since it is possible that the change scores simply reflect additional predictive power due to the addition of the most recent levels of UEO and OEO and not unique prediction added by changes in these measures, a second set of regression analyses is presented in Table 3.6B. This second analysis includes time 2 UEO and time 2 OEO in the model as control variables (instead of time 1 UEO and time 1 OEO). These results indicate that changes in UEO and

changes in OEO still made a specific and significant contribution to perceived quality of roommate relationships. For neighbours, changes in 'perceived obligations to the neighbour' were significant predictors, but changes in 'fear of being exploited' did not reach significant levels. This indicates that in the previous analysis the significant effect of this predictor (changes in UEO) was likely due to absolute levels of UEO at time 2. Nevertheless, there is strong support for the idea that changes in UEO and changes in OEO are important in predicting friendship levels over time, beyond the most recent measures of UEO and OEO.

Insert Table 3.6A and 3.6B about here.

Figure 3.1 portrays the mean levels of perceived friendship quality (standardized scores) after two and one-half months of being roommates, according to levels of UEO at time 1 (low: mean = 3.13, SD = 0.34, N = 19; moderate: mean = 4.20, SD = 0.24, N = 20; high: mean = 5.17, SD = 0.49, N = 18) and levels of UEO at time 2 (low: mean = 3.13, SD = 0.37, N = 19; moderate: mean = 4.14, SD = 0.29, N = 19; high: mean = 5.31, SD = 0.60, N = 19)³. Figure 3.1 makes it apparent that having a high UEO score (at time 1 or time 2) is not always associated with a low friendship quality score. The mean scores for those who had high exchange orientation scores at time 2 (the three bars on the far right of Figure 3.1) indicate that it is only those individuals who went up in exchange orientation whose perceived friendship quality was below the mean level (mean = 0). Those who had high exchange orientation scores at both time 1 and time 2 actually

appear to be fairly satisfied with their relationships relative to others. The bars labeled "U" represent the mean friendship scores for those who increased in exchange orientation. "S" indicates those classified as having the same UEO level at time 1 and time 2, and "D" represents those who decreased in UEO over time. For those who increased in UEO perceived friendship went down, and for those who decreased in UEO, or remained at the same level, perceived friendship quality was generally above the overall mean. These results support the new 'relationship-specific characteristics' model that changes in exchange orientation are important predictors of perceived friendship quality.

Discussion

The first goal of this research was to examine the relationship between two types of exchange orientation and perceived quality of same-sex friendships and acquaintanceships. Two relationships were examined: roommates and neighbours in university residence. Substantial support was found for the notion that the UEO and OEO have different associations with friendship quality based on correlations between exchange orientation and relationship quality *at the same point in time*. Supporting Sprecher's (1992, 1998) revised exchange orientation theory, strong positive associations were found between OEO and friendship quality in both roommate and neighbour relationships. The higher the perceived quality of their friendship, the higher was their anxiety to return favors. Sprecher (1998) who studied these constructs for both partners

³ The three levels of UEO were created by dividing the time 1 and time 2 UEO scores into three groups with approximately equal n's.

in dating relationships, found that both partner's OEO and own OEO have positive associations with various measures of relationship quality.

According to Murstein et. al.'s original model (1977), UEO should be positively related to neighbours' friendship quality (a situationally induced friendship with limited personal interactions) but negatively related to quality of friendship between roommates (also a situationally induced friendship but with higher levels of personal interaction). In contrast to these predictions, the current results indicated that UEO was negatively associated with quality of friendship for neighbours and unrelated to friendship quality for new (time 1) roommates. Before considering these results further, however, it is important to acknowledge the possibility of selection bias for the data concerning neighbours. As mentioned earlier, 19 of the 57 subjects in the experimental group referred to a different neighbour in phases one and two. Only the data from the 38 subjects who referred to the same neighbour during both measurements were used. It is possible that the neighbour relationships for the two neighbour groups differ in important ways. For example, the 38 subjects who referred to the same neighbour may have had better relationships with their neighbours than the 19 who 'self selected' a different neighbour. This would cause good quality neighbour relationships to be over represented in the sample. Although paired t-tests revealed no mean differences in friendship quality for the roommate and neighbour relationships that were analyzed, it is still possible that overall neighbour relationships would not have been as close had all neighbour relationships been included in the data set. Thus, differences between roommate and neighbour relationships should be interpreted with caution.

Keeping in mind that better quality neighbour relationships may be overrepresented, UEO was found to be negatively associated with friendship quality in neighbour relationships. Subjects who perceived their relationships with their neighbours to be of higher quality were less anxious that their neighbours returned favors. These findings are similar to those of Jones (1991), who also found a negative relationship between these two constructs for friends. Thus, Murstein et al's hypothesis that relationship quality for casual friendships would be positively associated with anxiety about reciprocation was not supported. This result can be understood in the context of the *'relationship-specific characteristics'* model. According to this model, the negative association between UEO and the development of relationship quality would be expected for individuals in new relationships that have not become more acquainted. In comparison to roommates, for neighbours there are fewer intervening factors that might facilitate social interactions and investment in the relationship. In the absence of these external factors neighbours may remain in the early acquaintance stage of friendships for much longer periods of time, if not indefinitely.

Does this mean that Murstein et al's hypothesis that higher expectations of tit for tat reciprocity may be appropriate for new or casual friendships, and may actually convey interest in the other person in this context, is incorrect? A variety of other studies also suggest that reciprocal exchange enhances trust in new and casual relationships, and the absence of reciprocity impedes it (Deutsch, 1958; Lindskold, 1978; Pilisuk, Kiritz & Clampitt, 1971; Pilisuk & Skolnick, 1968). Tit for tat reciprocity seems to act as mutual reassurance for both exchange partners in casual relationships. However, this does not

mean that anxiety about reciprocation will be positively associated with friendship satisfaction in the context of new and casual relationships. Rather, tit for tat reciprocity is more likely to characterize new and casual relationships compared to other types of relationships. I have argued elsewhere (Addison, Chapter 2) that it may be necessary to distinguish new and casual relationships from other types of relationships. In that study I found levels of underbenefiting exchange orientation to be higher with respect to acquaintance relationships than with close friends and kin. Also similar to Murstein et. al. (1986), Lydon, Jamieson and Holmes (1997) suggested that immediate reciprocity can signal attentiveness and interest in continuing the relationship. The authors compared anxiety experienced as a result of non-reciprocation in acquaintance relationships and close friendships. Supporting their hypothesis, they found that acquaintances were more upset about non-reciprocation than were close friends. Thus, although expectations of reciprocity may be negatively correlated with relationship quality in different relationships, absolute levels may vary across relationships.

Exchange orientation: Cause or effect of friendship quality?

Despite the significant synchronous associations between exchange orientation and friendship quality I found no support for exchange orientation either causing or being the result of friendship quality (see also Buunk & VanYperen, 1990; Sprecher, 1998). One criterion that must be met to support a causal inference for non-experimental data is that the cause must generate change in the effect, requiring a previous measure of the effect to control for temporal stability and the cross-sectional base-line association between the earlier measure and the cause (Newcomb, 1990, 1995). From the regression

analyses, there was no evidence that high OEO at time 1 led to increases in friendship quality by time 2. Nor was there any evidence that high UEO scores at time 1 led to decreases in friendship quality. The only evidence for this causal direction was opposite to what the popular '*stable trait*' models of exchange orientation theory predict. UEO scores at time 1 were found to be positively associated with friendship quality at time 2 (in the context of roommate relationships only). While it is possible that this is a chance artifact, Sprecher (1998) also found some evidence for this *positive* relationship in the context of dating relationships.

To examine the effect more closely, an ANOVA was conducted on changes in friendship quality (time 2 - time 1) with UEO level (high: mean = 4.87, SD = 0.55, N = 29; low: mean = 3.41, SD = 0.50, N = 28) as a between groups measure. A significant effect [$F(1,57)=5.34, p<0.05$] for UEO level revealed that friendship quality decreased significantly for subjects who had low UEO scores at time 1 (mean = -2.84, SD = 4.64, N=28) compared to subjects with high UEO (mean = 0.02, SD = 4.70, N=29) whose friendship quality, on average, did not change. Why should perceived friendship quality decrease over time for those with low UEO? As mentioned above, Lydon, Jamieson, and Holmes (1997) have suggested that immediate reciprocity can signal attentiveness and interest in continuing the relationship. They explain that evidence of reciprocity can secure feelings of equal involvement and attachment and that 'would be' friends (acquaintances who wish to become friends) find themselves drawn into being concerned about reciprocity because they require evidence of their partner's intentions to continue the relationship. Can it be that low UEO may signal 'non-interest' to a new friend? To

investigate this possibility it would be necessary to look at these constructs for both partners over time.

The New 'Relationship-Specific Characteristics' Model.

In the context of new relationships, like the roommates studied here, changes in expectations and obligations of reciprocity are predicted to occur as the relationship develops. It is through previous interactions that one learns how much others can be relied upon and trusted. Trivers (1971) suggested that affect functions as a barometer for trust and cooperation. In the current study some friendships increased in quality, but others decreased. As expected, these changes in friendship quality were associated with changes in anxiety about reciprocation. Increases in friendship were associated with decreases in UEO (anxiety concerning whether their friends would return favors) and with increases in OEO (anxiety over giving back favors when overbenefited relative to their friends). This was true regardless of the initial levels of UEO and OEO. This means that irrespective of whether subjects' initial exchange orientation scores were high or low, subjects whose perceptions of friendship satisfaction increased over time became less anxious about being underbenefited by their roommates and neighbours and more anxious about returning favors to these individuals.

Based on the current results, a causal mechanism cannot be elucidated. However, in his seminal paper on reciprocal altruism, Trivers (1971) suggested that the "emotions of friendship are not prerequisites for reciprocal altruism but may evolve after a system of mutual altruism has appeared, as important ways of regulating the system" (Trivers, 1971, p. 49). Thus, friendship satisfaction may develop not as a prerequisite for altruistic

behavior, but may be contingent on the outcomes of previous interactions (see also Tooby & Cosmides, 1996). However, as will be discussed in more detail below, one difficulty with examining the causal mechanisms underlying such processes is approximating the causal lag. For example, it would be difficult to determine exactly how long dissatisfaction that might result from perceptions of inequities in the relationship might last.

How would one expect changes in exchange orientation to be associated with changes in relationship quality in the context of well-established or stable relationships (e.g., marriages)? While it may be true that changes in EO are less important for stable relationships than they are for new relationships like the ones studied here, one would still expect that perceived imbalances of social exchange to cause dissatisfaction or uncertainty and that they might lead to increases in exchange orientation (Alessio, 1978). Recall that from this perspective EO scores are conceptualized as a measurement of level of expectation of reciprocity in a relationship rather than as a personality construct. Thus, a perception of being treated unfairly would lead to increased expectations of reciprocity and/or increased vigilance in tracking 'give and take' in the relationship. It intuitively seems that one might become more alert to potential imbalances if one has been treated inequitably in the past. According to Alessio, if perceptions of being treated inequitably persist, they are likely to lead to relationship dissolution. Presumably if equity is restored (which may require meeting higher standards when tracking of exchange is sensitized) relationship satisfaction will be restored.

To examine the causal relationship between exchange orientation and relationship satisfaction, researchers have looked at cross-lagged partial correlations. As mentioned earlier, no support was found in the current study or elsewhere (Buunk & VanYperen, 1990; Sprecher, 1998) for the reverse causal mechanism (i.e., that relationship satisfaction at time one would predict EO scores later on) predicted by the previous 'relationship satisfaction' model. However, one might argue that these tests are unsuitable. In Sprecher (1998) and Buunk & VanYperen (1990), the measured lags (i.e., the time intervals between the two sets of measurements) were 6 months and 1 year, respectively. While it seems perfectly appropriate to use such time intervals to look at effects of a personality characteristic (which is expected to have consistency over time) it may be less appropriate for a 'relationships dynamics' model. It is hard to imagine that dissatisfaction from a perceived imbalance would persist over 6 months or one year, unless there had been continued imbalances throughout the interval. Therefore, although a measured lag is not expected to correspond exactly to a causal lag (i.e., the time it takes for X to cause Y) (Kenny & Harackiewicz, 1979), one could argue that such long time intervals are inappropriate for testing any kind of dynamic relationships model.

Concluding comments.

According to the popular personality model, *absolute values* of exchange orientation are expected to be associated with relationship satisfaction. For example, high exchange orientation is expected to be negatively associated with relationship satisfaction. However, the current results showed that having a high UEO score is not always associated with low perceived friendship quality. It was only individuals who

went up in exchange orientation whose perceived friendship quality was below mean levels. Those who had high exchange orientation at time 1 and time 2 actually appeared to be fairly satisfied with their relationships relative to others. In general, for those who increased in UEO (and/or decreased in OEO) perceived friendship went down, and for those who decreased in UEO (and/or increased in OEO), or remained at the same level, perceived friendship quality was generally above the overall mean. These results support a dynamic 'relationship-specific characteristics model', suggesting that changes in anxiety over reciprocity are important for predicting changes in friendship quality.

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Table 3.1
Reliability Coefficients for the Exchange Orientation (EO) Scales (UEO and OEO)
and the Relationship Quality Scales

	Cronbach's alpha at Time 1		Cronbach's alpha at Time 2		Test - Retest Reliability (Time 1-2)	
	Roommate	Neighbour	Roommate	Neighbour	Roommate	Neighbour
EO scales						
UEO	.84 (N=55)	.82 (N=36)	.87 (N=56)	.87 (N=38)	.62 (N=57)	.67 (N=38)
OEO	.80 (N=55)	.64 (N=38)	.82 (N=57)	.81 (N=36)	.63 (N=57)	.51 (N=38)
Relationship quality scales						
McGill Friendship	.97 (N=54)	.96 (N=37)	.99 (N=53)	.97 (N=35)	.54 (N=57)	.55 (N=38)
McGill Partnership	.97 (N=16)	.98 (N=10)	.98 (N=39)	.98 (N=36)	.51 (N=57)	.61 (N=38)
Roommate Compatibility					.61 (N=57)	.36 (N=38)

Table 3.2.
Pearson Correlation Coefficients for Exchange Orientation Scales
and Friendship Quality at time 1 (9 days after meeting) and time 2 (75 days after
meeting) with respect to Roommate and Neighbour.

	Friendship Quality Time 1		Friendship Quality Time 2	
	Roommate	Neighbour	Roommate	Neighbour
UEO time 1	.065	-.291†	.288*	-.137
time 2	.021	-.369*	-.139	-.353*
OEO time 1	.376**	.306†	.213	.098
time 2	.366**	.266	.455**	.581**

† p < .10, * p < .05, ** p < .01, *** p < .001 (2-tailed)

Table 3.3

Test of the 'Stable Trait' Model': Hierarchical Regression Analyses Predicting Perceived Friendship Quality with Roommate and Neighbour after two and a half months in Residence from Exchange Orientation (UEO and OEO) at one week after meeting. Initial friendship quality score was the best predictor of later friendship quality. The initial Exchange Orientation Scales (UEO and OEO) did not predict time 2 friendship quality, disconfirming the 'Stable Trait' Model.

<i>Predictors</i>	Roommate		Neighbour	
	R ² Change	β	R ² Change	β
Control Variables:				
Block one...			.131	
Order of relationship presentation at time 1	.059			
Order of relationship presentation at time 2		-.253		1.06*
Order 1 x order 2 interaction		-.126		1.16*
Block two...		.281		-1.37*
Friendship Quality at time 1	.325***	.641***	.336***	.589***
Main Effects:				
Time 1 UEO 'concern about receiving reciprocation'	.058*	.295*	.009	-.079
Time 1 OEO 'concern about giving back'	.006	-.089	.003	-.066
Multiple R	.669***		.693**	
R ²	.448***		.480**	

Note. N = 57 for roommate, N=38 for neighbour. * significant at the .05 level. ** significant at .01, *** significant at .001

Table 3.4

Test of the 'Relationship-Satisfaction Model': Hierarchical Regression Analyses Predicting Exchange Orientation Scores toward Roommate and Neighbour after two and a half months in Residence from Friendship Quality score one week after first meeting. Initial exchange orientation scores were the best predictors of later exchange orientation. The initial friendship score was not predictive, disconfirming the 'Relationship Satisfaction' Model.

<i>Predictors</i>	Roommate		Neighbour	
	R ² Change	β	R ² Change	β
Underbenefiting Exchange Orientation				
Control Variables:				
Block one...				
Order of relationship presentation at time 1	.041	-.152	.098	-.441
Order of relationship presentation at time 2		-.122		-.686
Order 1 * order 2 interaction		.088		.984
Block two...				
UEO at time 1 'concern about receiving reciprocation'	.356***	.665***	.461***	.678***
Main Effects:				
Friendship Quality at time 1	.000	.003	.014	.106
Multiple R	.630***		.757***	
R ²	.397***		.573***	
Overbenefiting Exchange Orientation				
Control Variables:				
Block one...				
Order of relationship presentation at time 1	.032	-.349	.079	.552
Order of relationship presentation at time 2		-.212		.720
Order 1 * order 2 interaction		.315		-.952
Block two...				
OEO at time 1 'concern about giving back'	.378***	.541***	.235**	.458**
Main Effects:				
Friendship Quality at time 1	.031	.200	.010	.106
Multiple R	.664***		.569*	
R ²	.441***		.324*	

Note. N = 57 for roommate. N=38 for neighbour. * significant at the .05 level. ** significant at .01. *** significant at .001

Table 3.5.

Pearson Correlation Coefficients between Changes in Exchange Orientation Scales and Friendship Quality at time 2 (after 75 days).

	Friendship Quality at Time Two	
	Roommate	Neighbour
UEO change ^(time 2 - time 1)	-.474***	-.280†
OEO change ^(time 2 - time 1)	.352**	.550***

Note. † significant at the .10 level, ** p <.01, ***p<.001 (2-tailed)

Table 3.6

Test of the '*Relationship-specific Characteristics*' Model: Hierarchical Regression Analyses Predicting Perceived Friendship Quality with Roommate and Neighbour after two and a half months in Residence on the basis of changes in relationship quality over that time period.

A) Controlling for time 1 UEO and OEO

<i>Predictors</i>	Roommate		Neighbour	
	R ² Change	β	R ² Change	β
Control Variables:				
Block one...				
Order of relationship presentation at time 1	.059		.131	.454
Order of relationship presentation at time 2		-.116		.362
Order 1 * order 2 interaction		-.053		-.295
Block two...		.140		
Friendship Quality at time 1	.325***	.550***	.336***	.570***
Main Effects:				
Time 1 UEO 'concern about receiving reciprocation'	.058*	.072	.009	-.026
Time 1 OEO 'concern about giving back'	.006	.131	.003	-.012
Changes in UEO (time 2 - time 1)	.136***	-.369***	.061*	-.274*
Changes in OEO (time 2 - time 1)	.115***	.403***	.219***	
				.531***
Multiple R	.836***		.872***	
R ²	.699***		.760***	

Note. N = 57 for roommate, N=38 for neighbour. * significant at the .05 level, ** significant at .01, *** significant at .001

B) Controlling for time 2 UEO and OEO

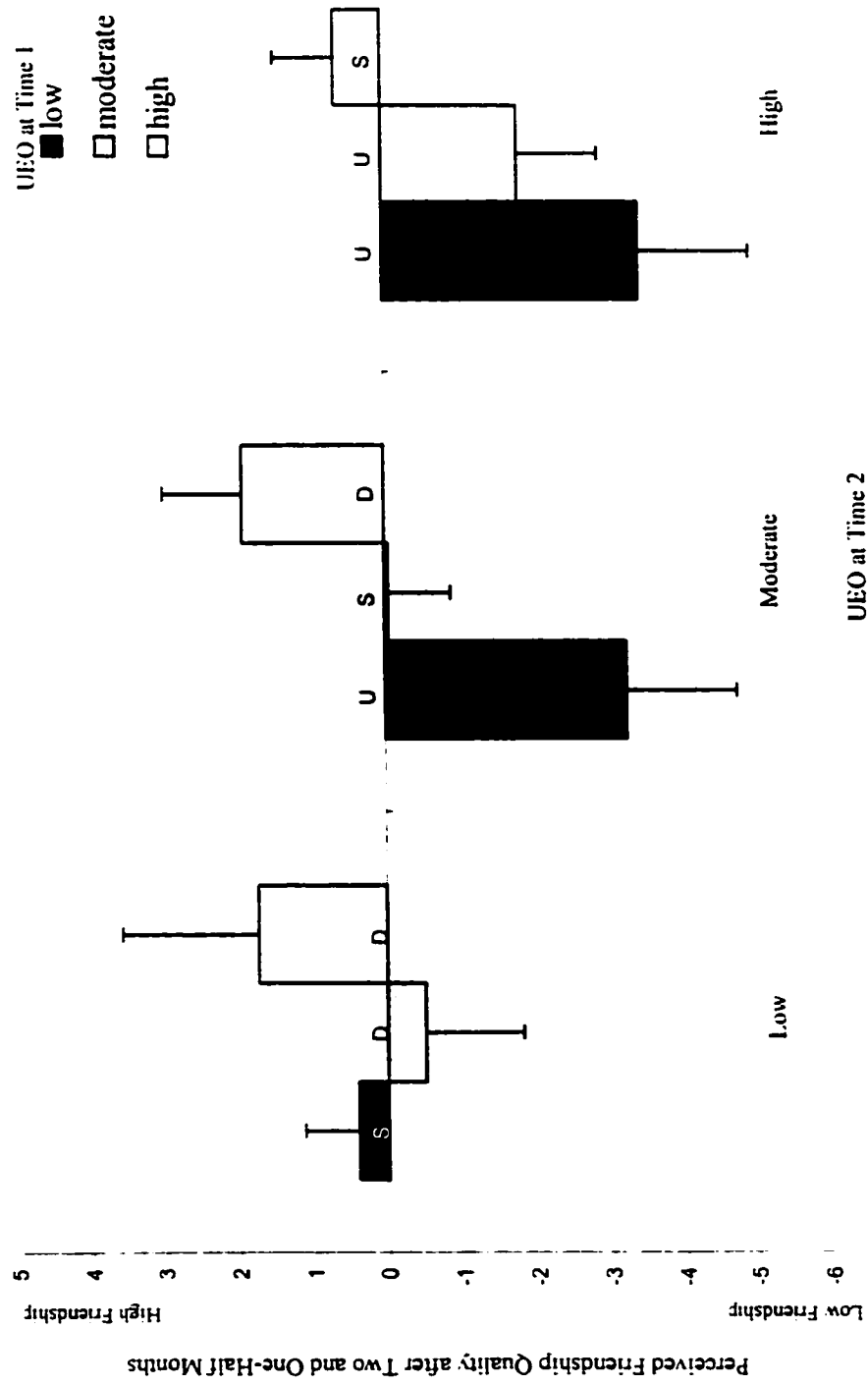
<i>Predictors</i>	Roommate		Neighbour	
	R ² Change	β	R ² Change	β
Control Variables:				
Block one...	.059		.131	
Order of relationship presentation at time 1		-.116		.454
Order of relationship presentation at time 2		-.053		.362
Order 1 * order 2 interaction		.140		-.295
Block two...				
Friendship Quality at time 1	.325***	.550***	.336***	.570***
Main Effects:				
Time 2 UEO 'concern about getting back'	.021	.063	.044	-.027
Time 2 OEO 'concern about giving back'	.129***	.127	.130***	-.014
Changes in UEO _(time 2 - time 1)	.101***	-.428***	.000	-.253
Changes in OEO _(time 2 - time 1)	.065**	.292**	.119***	.544***
Multiple R	.836***		.872***	
R ²	.699***		.760***	

Note. N = 57 for roommate, N=38 for neighbour. * significant at the .05 level, ** significant at .01, *** significant at .001

Figure Legend

Figure 3.1. Mean levels of perceived friendship quality after two and one-half months of being roommates as a function of time 1 and time 2 UEO scores.

Figure 3.1. Mean levels of perceived friendship quality after two and one-half months of being roommates as a function of time 1 and time 2 UEO scores.



S: UEO time 1 = UEO time 2, U: UEO time 2 > UEO time 1, D: UEO time 2 < UEO time 1

CHAPTER IV

**Encoding Kinship: The importance of genetic relatedness
in judgements of equity and entitlements in relationships.**

(to be submitted to *Small Group Behavior*)

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Abstract

The present study assessed the impact of information concerning genetic relatedness on perceptions of (in)equity in kin relationships. Research subjects, cast in the role of observers, viewed fictional stories portraying one of two resource allocation decisions that created inequity among full and half-siblings. In one story, inequity was created by the father having differentially allocated economic benefits among the siblings. In the second variant, inequity was created when one sibling selfishly and deceptively kept parental resources from his other siblings. Subjects were given an opportunity to redistribute the parental resources any way they wished. Based upon attributions about the protagonists in the stories, the manipulations that were intended to create inequities among the siblings did appear to do so. However, subjects did not attempt to restore equity in all conditions that portrayed inequity. Subjects did not restore funds to those offspring who had been “underbenefited” by the father. This was true regardless of whether the underbenefited child was the father's step-child or one of his genetic offspring. In contrast, subjects' reactions to sibling deception did vary according to the siblings' genetic relationship. Although sibling deception appeared to be viewed as a violation in *all* conditions portraying inequity, subjects were more likely to restore equity when a half-sibling was deceived than when a full-sibling was deceived. In addition, subjects appeared to categorize the family members into different coalitions based on their genetic relationships.

Key words: equity, entitlement, familial relationships.

Introduction

For more than a decade, social-relations research has emphasized the importance of perceptions of equity for understanding relationship satisfaction. Equity theory contends that individuals who perceive themselves to be in an *inequitable* relationship will feel distressed and dissatisfied with that relationship and that this dissatisfaction may result either in attempts to establish equity within the relationship or dissolve the relationship (Adams, 1965; Hatfield & Traupmann, 1981; Hatfield, Utne & Traupmann 1979; Sprecher, 1992). These premises have been fairly well supported, particularly for marital relationships (Buunk & VanYperen, 1991; Davidson, 1984; Hatfield, Traupmann, Sprecher, Utne & Hay, 1985; Schafer & Keith, 1980; Sprecher, 1986; VanYperen & Buunk, 1990; VanYperen & Buunk, 1994). For example, Prins, Buunk & VanYperen (1993) found that women who report inequity in their marital relationship are more likely to be dissatisfied with their marriages and more likely to desire, and to engage in, extra-marital romantic relationships.

Across human cultures kin relationships are among the most important relationships to people (Argyle & Henderson, 1984; Buss, 1994; Brown, 1991), yet these relationships are relatively ignored in the social relations research. A variety of models do suggest that social exchange processes in kin relationships differ from other types of relationships (Daly, Salmon & Wilson, 1997; Daly & Wilson, 1995; Fiske, 1991; Hamilton, 1964; Trivers, 1971). Based upon these models, and also upon 'societal' expectations (see below), it is reasonable to expect that how kin react to inequities, and the effect that such inequities have on consanguineal relationships, may be quite different

from what happens in other relationships (e.g., marital and non-kin relationships). The goal of the present study was to begin to remedy this void in the equity research by investigating people's reactions to inequities that occur specifically in the context of familial relationships.

Perhaps one of the reasons for this 'gap' within social-relations research is due to people's intuitive sense that equity (and entitlements) within kin relationships differ from those in non-kin relationships. As William James stated, when referring to the study of emotions, perhaps some may deem such study to be 'a matter too notorious for proof' (James, 1884, pp. 192).

Although there has been little scientific examination of this premise, there are many illustrations that people expect others to treat their kin differently from non-kin. For example, our legal system, which is thought by some to reflect common moral intuitions (Haidt & Baron, 1996), reflects implicit differences in assumptions regarding the exchange of resources in family and non-family relationships. Beckstrom (1986), for example, has shown that there are implicit differences in contract law regarding compensation for services. Although reasonable compensation is expected when a service is provided to a beneficiary outside the family, if the exchange of services occurs between members of the same household the reverse presumption applies. According to these 'presumptions' of the judicial system (which Beckstrom regards as the typical expectations of Western society) reciprocation is expected in non-kin relationships but not in kin relationships.

Similarly, Burnstein et. al. (1994) describe how helping kin in our society is seen as less deserving of recognition than helping non-kin. They call attention to the Carnegie hero fund which bestows awards on individuals who show exceptional bravery when helping others. Since 1904 eight thousand people have been recognized for heroic acts, but only a handful of awards were given to individuals who helped kin. Since kin are expected to help each other, such behaviors are not considered extreme acts of bravery unless they occur in exceptional circumstances (e.g., when a child saves a parent). Consider also that David Kaczynki was publicly declared a hero on National television for alerting authorities that the identity of the Unabomber was his brother. It is expected that people will 'protect' the interests of their kin. In this situation, a brother was given public affirmation and recognition for 'giving up' his brother to authorities. It is unlikely that the public affirmation would have been as grand if non-kin (e.g., a neighbor) had revealed this information.

These examples illustrate our intuitive expectations that people treat their kin differently from non-kin. It may be that these intuitive differences reflect what Daly, Salmon & Wilson (1997) have called 'relationship specific kinship psychologies'. They suggest that there are different decision rules guiding behaviors in different types of relationships and list a number of expected universal kinship patterns. Among them is the following: closer genetic relatives are expected to have closer relationships, cooperate more often, and share more similar interests than individuals with smaller coefficients of relatedness.

There are a variety of studies supporting Daly et. al.'s hypothesis. Several studies now show that people are more likely to help (or invest in) close kin than distant kin or non-kin. For example, in hypothetical life or death scenarios, people chose to aid close kin over distant kin (Burnstein, Krandell, & Kityama, 1994). Similarly, Cialdini et. al. (1997) found that the amount of help given to family members (relationship undefined) was significantly greater than the amount of help given to acquaintances or strangers. Furthermore, as the severity of need increased, the greater was the magnitude of the differences between relationship categories. Close kin are also more likely to offer help than more distant kin and the greater the magnitude of the helping behaviors received the more likely it is to come from kin (Essock-Vitale & McGuire, 1985). Hames (1987) found that brothers tolerate imbalances of reciprocity that would be considered unacceptable in friendships with non-kin.

There is also some evidence that kin are emotionally closer than non-kin. For example, fathers with both stepchildren and genetic children get along better with and spend more time with their genetic children (Flinn, 1988; Marlowe, 1999). Marlowe (1999) found that among Hadza men (hunter/gatherers of Tanzania) stepfathers play more with their genetic children than their stepchildren. During the period of observation stepfathers never once played with their stepchildren.

Genetic relationships not only affect how much we invest in and how close we feel to others but also the likelihood that we might harm others. Close relatives are less violent to each other, and collaborate to do violence against others more than would be

expected based on how much time they spend together (Daly & Wilson, 1988). For example, the presence of a stepparent in the home has been shown to be a powerful epidemiological risk marker for child abuse and murder (Daly & Wilson, 1988, 1998).

Hamilton's theory of kin selection (Hamilton, 1964) provides a conceptual framework for understanding why the 'decision rules' underlying certain behaviors may differ for different types of genetic relationships. According to Hamilton: "the social behaviour of a species evolves in such a way that in each distinct behaviour-evoking situation the individual will seem to value his neighbours' fitness against his own according to the coefficients of relationship appropriate to that situation" (Hamilton, 1964, pp. 23). According to this theory, investment in kin is more likely to occur (without expectation of reciprocation) when an individual's gain through inclusive fitness is sufficiently large to offset individual loss in direct fitness. This decision rule can be contrasted with decisions to invest in non-kin where investment is not likely to occur if reciprocal benefits are not likely to be obtained (directly or indirectly).

The present study

Two studies will be presented. The first study is the 'primary' focus of this paper and will be discussed next. The second study was conducted as a follow-up study to explore particular hypotheses more closely.

Study one

Clearly, information pertaining to genetic relationship influences our own behavior and what we expect others to do. The goal of the present paper was to

investigate how genetic relationships might influence people's reactions (as observers) to evidence of (in)equities that occur within familial relationships. To do this, subjects viewed fictional stories portraying resource allocation decisions made by different family members. Inequities were created among the siblings in two ways. One story variant depicted inequities created through differential parental treatment, while the second story created inequities among siblings when one sibling selfishly (and deceptively) kept parental resources from his other siblings.

Differential parental treatment.

In light of evolutionary theories about the design of human minds, parental affection and valuation of offspring are expected to vary as a function of offspring need, degree of genetic relatedness and other factors influencing potential reproductive success (e.g. Daly & Wilson, 1988, 1995). While it may be a parent's prerogative to invest differentially in children, the offspring are likely to have a different perspective. Parental favoritism or differential valuation and treatment are perennial concerns for children. One of the fictional stories used in the present study depicted a father distributing his resources unequally among his offspring. In the absence of any cues of differential reproductive potential or offspring need, I hypothesized that all of the offspring would be considered equally deserving of the parental resources. I expected that the unequal distribution of parental resources would be perceived as inequitable treatment of offspring.

Sibling deception.

Offspring are expected to be vigilant with respect to detecting whether they are disadvantaged in any way compared to their siblings and also to try to gain some advantage over siblings. In a second variant of the fictive story, one of the three siblings deceptively kept parental resources that should have been divided equally among all of the offspring. I expected this deception to be perceived as a violation of sibling relationships and to be perceived as creating inequity.

Manipulating genetic relationship.

One of the main goals of this paper was to investigate the impact of presumptive genetic relatedness on people's reactions to inequities among family members. The *genetic relatedness* of family members was manipulated by changing whether the offspring in the stories were the father's genetic children or his stepchildren and hence whether siblings were full or half. As will be discussed in more detail below, subjects of the current study were asked to make attributions about the protagonists in the stories and were given the opportunity to 'restore equity' among the characters in a resource allocation task. I expected that when subjects perceived that a violation of obligations and entitlements had occurred in the familial relationships these subjects would 1) predict negative consequences for those relationships and 2) attempt to restore equity by reallocating funds among the siblings.

Furthermore, I expected that information concerning the genetic relatedness of the story characters would affect whether the manipulations that were intended to

create inequities among the siblings would be perceived as doing so. One possibility was that because kin are expected to have closer relationships and be more willing to invest in each other, inequity would be perceived as a greater violation of close kin relationships than of more distant kin relationships. Alternatively, because reproductive benefits can be derived from inclusive fitness, kin are expected to be less concerned about imbalances of resource distribution (relative to non-kin). Therefore, another possibility is that resource inequities would be perceived as having fewer negative consequences for the story characters when they occurred in the context of consanguineal relationships than in the context of more distant affinal relationships.

Measuring perceptions of entitlements and inequitable parental treatment.

In the current research, subjects were cast in the role of observers. This role may be viewed as similar to a courtroom judge. Because an important part of human cognition involves conscious or sub-conscious assessment of the motives behind peoples' behaviors one would expect that the human mind would have cognitive mechanisms that are designed to understand and predict the outcome of those mechanisms in others with whom we interact. In order to investigate people's perceptions of equity and entitlement in the familial relationships presented in the fictive vignettes, subjects were asked to make attributions about the protagonists of the story (e.g., emotional closeness between the characters and likeableness of the father) and about the appropriateness of the allocation of the deceased's estate (money is a common index of judgments of equity).

Attributions about the protagonists of the story.

Relationship closeness and likeableness of the father. Intimacy or closeness within relationships is hypothesized to result from the activation of psychological mechanisms that 'monitor' exchange of altruistic behaviors within sustained reciprocal relationships (Nesse, 1990). For example, equity theory (Adams, 1965; Homans, 1974; Walster, Walster & Berscheid, 1978) contends that individuals involved in an *inequitable* relationship will feel unsatisfied with that relationship and become distressed. In contrast, altruistic acts are hypothesized to result in increased closeness or intimacy (from the recipient's perspective). In keeping with this line of reasoning, subjects were asked to make attributions concerning the emotional closeness of the various parties. I expected that preferential parental investment in an offspring would cause the parent-'preferred' child relationship to be judged to be closer than the same relationship in the equal parental investment conditions or the parent - 'nonpreferred' offspring relationships. In the variants of the stories portraying sibling deception, I expected the relationships between siblings to be judged more distant when sibling deception occurred than when sibling deception was absent.

Another dependent measure simply asked subjects how much they liked the father (similar likeability scales have been used in previous studies of equity, for example Rubin, 1970). I expected that if subjects did not agree with the father's decision to treat his offspring inequitably they might indicate that they did not like the father as much in these conditions.

Resource allocation task.

One important assumption of equity theory is that individuals are motivated to restore equity when inequity is perceived (Adams, 1965; Hatfield et. al., 1979). Based on this assumption, it follows that perceptions of inequity would influence how subjects distributed funds among the story characters when they were given the opportunity to distribute funds in a way that subjects deemed appropriate. More specifically, it was predicted that subjects would be inclined to redistribute the value of the estate so that those children in the story who were treated more favourably by the father would be given a smaller allocation relative to the siblings.

If viewers of the photo-questionnaire story share the moral intuitions that follow from equity theory then it was anticipated that they would re-allocate the value of the estate so that all parties benefit equally. As will be discussed in more detail below, this did not always mean distributing funds equally among the offspring. However, if viewers take the past behavior of the father (equitable or inequitable treatment of the siblings) as a guide in allocating the estate then the estate would be divided such as to maintain the favoured status of the one sibling, especially if information was available that "justified" the father's inequitable treatment.

Study 1: Method*Subjects.*

Two hundred and twenty eight students enrolled in an introductory psychology course viewed the fictive photo-story and completed the questionnaire in

return for course credit. The mean age of the 111 female and 117 male students was 20.2 years (ranging from 15 to 47 years).

Procedure.

Subjects were informed that they would be viewing a story about a family on the computer and that following the story they would be asked some questions about their interpretation of the story. They were instructed to proceed at their own pace but they would not be able to go back to previously viewed screens. After reading the photo-story, subjects answered questions about the fictive family and answered some demographic questions about themselves. The questionnaire is appended (Appendix C). The entire task took 25 minutes to complete.

The basic storyline.

The story was about how a widowed father had distributed resources among his three children. The eldest child was a son, the middle child a daughter, and the youngest child a son. The amount of funds distributed among the offspring and the reasons for the investments remained the same in all story variants. In all stories the eldest brother had received \$20,000 to start a contracting business, the middle daughter had received \$25,000 to open a greenhouse business, and the youngest brother had received \$20,000 for the down payment on a house. None of the offspring were aware that the father had financed the others as well. Some time after these allocations took place, the father passed away without leaving a will. The offspring had to decide how to divide the family estate. At this point the siblings were still unaware of the father's investments in the others and none of the money

owed to the estate by any of the children had been repaid. As will be discussed in more detail below, the 'parental investment' variable was manipulated by changing whether the youngest son received the \$20,000 down payment as a loan (as did his brother and sister in all story variants) or as a gift that did not need to be repaid to the estate (whereas his brother and sister received loans that should have been repaid). The 'sibling deception' variable was manipulated by changing whether this 'preferred' youngest son divulged, or failed to divulge, the receipt of this money from the father to his brother and sister.

Electronic photo-questionnaire design. The photographic images used in the photo-story were acquired via a Snappy Video Snapshot™ device from prerecorded videotapes and public broadcasts. The electronic images were manipulated to create the desired visual content using Adobe Photoshop Graphics Software 3.0™. Adding appropriate narrative to the images created the alternative story variants. The finished images were then compiled into executable programs with the questionnaire using Visual Basic 3.0™. With the exception of text changes, the images were identical for each of the story variants.

Study design. A 2 x 2 x 2 crossed factorial design was used with 1) three genetic offspring of the father versus two genetic offspring and one stepchild, 2) parental favoritism or not, and 3) sibling disclosure of parental investment or not (deception). Subjects were randomly assigned to one of the eight versions of the story (see appendix B). The dependent variables included viewers' opinions about how the family estate (resources) should be divided among the three siblings, viewers'

judgments concerning the closeness of the family relationships, judgements concerning 'likeableness' of the father and several other measures that are not the focus of the current paper (these questions are also in appendix C).

Genetic relatedness. There were two story versions in which genetic relatedness between the story characters was experimentally varied. In the first condition all three offspring were the father's genetic offspring. In the second condition *only* the eldest son was the father's stepchild, while the other two children were the father's genetic offspring. The stepchild was a child from the mother's first marriage and was not genetically related to the father; thus, he was a maternal half-sibling of the daughter and the younger brother.

Parental treatment. As mentioned above, the parental investment variable was manipulated by changing how the father had distributed funds prior to his death. In the "equal parental investment" conditions the father treated each of the three offspring equally: all had been given a loan to be paid back at some point in the future. In the "inequitable treatment" conditions, he treated the youngest son (always the father's genetic son) preferentially, by making the money for the down payment a gift, and lending the other two children money that was to be repaid. When the siblings were deciding how to divide the family estate, the two offspring who 'always' received loans (i.e., who did so in all story variants) also always told their siblings about the loans.

Sibling deception. The deception variable was manipulated by varying the way that the 'preferred' sibling behaved at the time of the intestate proceedings. The

youngest son, who received a gift in the inequitable conditions or a loan in the equitable versions of the story, could either tell his brother and sister about it or not tell them. These two variants were intended to represent “honesty” versus “sibling deception” conditions, respectively. Not telling the other siblings about the loan implies that he did not intend to pay his loan back. This means that the deceptive sibling was withholding resources that otherwise should have been shared with his siblings. However, not telling them about the gift was not withholding resources in the same sense because the money did not need to be repaid. Hence when the sib did not disclose the gift, he was simply not telling them about the parental favoritism. Importantly, when the brother did tell his brother and sister about the gift he received from their father he also told them *he would pay this money back to the estate*. This means that when the brother was honest about having received a gift the final relative distribution of funds among the three offspring was the same as the condition in which this son was honest about equitable treatment. Therefore, differences between these two conditions should not be caused by differences in the absolute values of funds received by each of the offspring (see table 4.1 for a synopsis of the electronic-photo story).

 Insert table 4.1 here

Dependent measures.

Resource re-allocation task. One of the dependent measures of this study was the subjects’ responses to a resource allocation task. The subjects were asked to make decisions about how the estate should be divided among the offspring. This was operationally defined by the following instruction: “Given that none of the money owed

to the estate has been paid, if you were to divide the \$150,000 between [the three offspring] any way that you liked how much would you give to each of them?" As subjects indicated their distribution, a pie chart appeared, visually illustrating their relative distribution among the offspring.

Attributions of closeness of relationship. Subjects were also asked to judge the closeness of the relationship between the late father and each of the three offspring and for each pair of siblings during two different intervals of the characters' lives. More specifically, they were asked "How close do you think [the sibling pair] was before [their father] passed away [i.e., *before* the siblings knew about the different parental investments and/or sibling deception]" and "How close do you think [the sibling pair] will be after the meeting at the lawyer's office [i.e., *after* the siblings learned about the different parental investments and/or sibling deception]". Subjects indicated their responses to these questions on 7-point Likert-type scales with 1 representing 'very distant' and 7 representing 'very close'.

Attributions of how likeable the father was. Another dependent measure was simply "How much do you like [the father]." Subjects indicated their response on a 7-point Likert-type scale with 1 representing 'dislike' and 7 representing 'like'.

Data analyses.

A sibling deception (honest, dishonest) X parental treatment (gift, loan) X genetic relatedness (three genetic offspring, two genetic offspring and one stepchild) multivariate analysis of variance (MANOVA) was performed for all of the dependent measures just

described. These included 1) judgments of closeness of each of the parent-offspring relationships, 2) judgments of closeness of each of the relationships both before and after the characters had learned about sibling deception and the different parental investments, 3) the funds allocated to each of the offspring, and 4) how much the subjects liked the father. Univariate tests were also used to examine the effects of each dependent variable.

Study 1: Results

Differential parental treatment of siblings.

Attributions of closeness of father-offspring relationships. Table 4.2 illustrates the mean judgments of relationship closeness prior to the father's death for each of the three parent-child relationships according to type of parental investment. Univariate tests indicated that subjects judged the father-youngest son relationship to be closer in the 'differential parental investment' condition, where this son was treated preferentially (i.e., he was given a gift that his siblings did not get), than in the 'equal parental investment' condition where this son was treated the same as his brother and sister [$F(1,228)=7.73, p = .006$]. In contrast, the father-daughter and father-eldest son relationships were judged to be more distant in the 'differential parental investment' condition, where these offspring were given less than their younger brother, than in the 'equal investment' condition when all the offspring were treated the same [for the father-daughter relationship, $F(1,228) = 22.61, p < .001$; for the father-eldest son relationship, $F(1,228) = 12.08, p < .001$].

Insert table 4.2 here.

Attributions of closeness of sibling relationships. Subjects were also asked to judge the closeness of the different sibling pairs both before and after the characters had learned about the benefits conferred by the father upon their siblings. To examine the effect that subjects thought this information would have on the various sibling relationships, change in perceived relationship closeness was computed (closeness before learning about parental treatment – closeness after learning about parental treatment) for each of the sibling relationships. The mean ratings of the predicted changes to sibling closeness as a function of parental treatment are shown in Table 4.2. Univariate tests indicated that the 'preferred' youngest brother/'non-preferred' eldest brother relationship was judged to become more distant in the 'inequitable parental investment' conditions than in the 'equal parental investment' conditions [$F(1,228)=17.12, p<0.001$]. Judgements concerning the 'preferred' youngest brother/'non-preferred' sister relationship were not significantly different for the two parental investment conditions [$F(1,228)=.960, p=.33$]. However, the analysis also revealed a significant parental investment by sibling deception interaction for both of these relationships [for the youngest 'deceptive' brother-sister relationship, $F(1,228)=4.05, p=0.04$; for the youngest 'deceptive' brother-eldest brother relationship $F(1,228)=13.26, p<0.001$, respectively]. Figure 4.1 portrays these effects. Whereas the 'honesty/dishonesty' manipulation had a significant impact on judgements of relationship closeness in the 'equitable treatment' condition, it did not have a significant effect on these judgements in the 'inequitable treatment' conditions. Follow-up t-tests indicated that although deception concerning the parental gift had a

greater negative impact on closeness of relationship than did honesty, their effects were not significantly different (for the 'deceptive brother-sister $t(104)=1.76$, $p=.08$, for the 'deceptive brother-brother $t(104) = 1.58$, $p = .12$), but both were significantly different from zero (for the 'deceptive' brother-sister $t(105)=-6.50$, $p<.001$, for the 'deceptive brother-brother $t(105) = -10.58$, $p<.001$). It is important to contrast the condition in which the youngest son was honest about receiving the gift (and paid this gift back to the estate) with the condition where the youngest son was honest about 'equal parental treatment'. Whereas subjects did not predict change in closeness of the sibling relationships when the son was honest about having been treated the same as his siblings, subjects predicted that honesty about having been treated preferentially would cause the sibling relationships to become less close, *even though the brother paid back the gift to the estate* (for the 'preferred' brother-sister $t(108)=.83$, $p=.41$, for the 'preferred' brother-brother $t(108) = -.23$, $p = .81$).

 Insert figure 4.1 here.

Likeableness of the father. Subjects also reported that they 'liked' the father less in the conditions where he treated his children differently (mean = 4.7, SD = 1.48) than in the equal treatment conditions (mean = 5.72, SD = 1.39) [$F(1,228) = 28.72$, $p < .001$].

Resource allocation task. This dependent measure gave subjects the opportunity to allocate funds among the three offspring in any way they wished. I expected that if subjects perceived the inequitable treatment of offspring to be a violation of parental

obligations subjects would reallocate the estate to establish equity among the offspring. This means that in the condition where the 'preferred' son was honest about (and repaid) the gift subjects would distribute funds equally among the three offspring and, in the condition where the preferred son did not tell his siblings about the gift (and kept the gift) he would receive fewer funds than to his siblings. If however, they felt this was a parental prerogative, subjects would retain the inequitable distribution by allocating more funds to the preferred offspring than to his siblings. This means that in the condition where the 'preferred' son was honest about (and repaid) the gift, subjects would give him more funds than his siblings and, in the condition where the preferred son did not tell his siblings about the gift (and kept the gift) he would receive the same amount of funds as his siblings. Contrasts showed no significant effects ($F(1,106)=2.40, p=.13$) but there was a trend to restore equity among the siblings. The preferred son was given about one third of the estate when he was honest about having received a gift (mean = \$50639, SD=7145) and slightly less when he didn't tell his siblings about it (mean=\$48009, SD=\$10940). In addition, there was no indication of an interactive effect of discriminative parental investment and genetic relationship of the offspring.

Sibling deception.

Attributions of closeness of the sibling relationships. As already mentioned, subjects were asked to judge the closeness of the sibling relationships both before and after becoming aware of the sibling's attempt to hide the gift/loan. Not surprisingly, subjects judged that the closeness of the sibling relationships would decrease if

sibling deception occurred. The youngest 'deceptive' brother- 'honest' sister relationship and youngest 'deceptive' brother- 'honest' eldest brother relationships were judged to become significantly more distant when the youngest brother deceived them [$F(1,228)=42.91, p<0.001$ and $F(1,228)=23.02, p<0.001$, respectively].

However, as already discussed, this effect was qualified by a sibling deception by differential parental investment interaction [for the youngest 'deceptive' brother-sister relationship, $F(1,228)=4.05, p=0.04$; for the youngest 'deceptive' brother-eldest brother relationship $F(1,228)=13.26, p<0.001$, respectively]. Figure 4.1 portrays this effect for each of these sibling-sibling relationships. *Post hoc* t-tests indicated that for the two 'deceptive sibling'- 'honest sibling' relationships, deception about the loan had a negative impact on expected sibling relationship closeness relative to being honest about receiving the loan (i.e. equitable treatment) ('deceptive brother-sister $t(120)=5.21, p<0.001$, for the 'deceptive brother-brother $t(120) =7.9, p<0.001$). Therefore, as expected, subjects judged that the 'deceptive' sibling - 'honest' sibling relationships would be less close when the youngest brother withheld resources from his siblings by deceiving them about having received a loan from their father.

Resource allocation task.

By definition, allocating less or more to one of the siblings affected the allocation to the others. However, which of the other two siblings (or both) was affected could vary. A complete statistical analysis allowing investigation of the distributions among offspring then requires reporting effects for each of the three offspring.

The analysis revealed a significant interaction between 'sibling deception' and 'genetic relatedness'. The presence of deception had a different effect on subjects' allocations depending on whether the brother deceived full siblings or a half sibling. Analyses suggest that funds were "taken away" from the dishonest brother only when he was being dishonest to a half sibling ($F(1,228)=5.32, p=.02$). Furthermore, funds taken away from the dishonest brother were reallocated to the half sibling only. Subjects allocated more funds to the deceived brother when he was a half brother than when he was a full brother, but this effect was not quite significant ($F(1,228)=3.32, p=0.07$). Even though the sister was also deceived, she was not given additional funds when funds were taken away from the youngest brother and allocated to their half sibling. The sister received the same amount of funds when her full brother was deceptive to her as she did in the 'honest' conditions ($F(1,228)=.156, p=.694$). Allocations across offspring, as a function of sibling deception, genetic relationship, and their interaction, are portrayed in Figure 4.2.

Insert Figure 4.2 here.

Discussion of Study One

The results of the present study indicated that inequity due to a parental decision did not evoke a strong inclination to impose equity. However, equivalent inequity resulting from sibling deception was apparently disapproved as indicated by subjects reallocating resources to the other sibling. The discussion below elaborates on these findings and their implications.

Parental treatment.

Cues indicative of differential parental treatment were manipulated by having the father treat each of his offspring equally in some conditions and having him preferentially invest in one of his offspring in other conditions. According to the dominant theories of equity in social psychology, individuals who perceive their relationship to be inequitable are likely to be dissatisfied with those relationships and to either seek to restore equity or terminate them (Adams, 1965; Hatfield, Utne & Traupmann 1979; Hatfield & Traupmann, 1981; Sprecher, 1992). In the present study, subjects viewed photo-stories of parental resource allocations that were intended to represent equitable or inequitable distributions among offspring. The subjects' perspective is best viewed as that of an observer, perhaps analogous to that of a courtroom judge. To investigate whether differential parental investment would be perceived as inequitable treatment of offspring and whether this inequitable treatment would be judged as having a negative impact on the familial relationships presented, subjects were asked to 1) make attributions about the characters of the story and 2) allocate resources among the offspring any way they wished.

According to equity theory, one might hypothesize that subjects would perceive differential parental treatment as causing inequity among siblings and would attempt to restore equity by distributing a somewhat greater proportion of parental resources to any under-benefited offspring. Although there was some inclination to restore equity among the siblings by reallocating the estate funds, this finding was not significant. One might argue that the differential parental investment portrayed in

these stories was not perceived as inequitable treatment of offspring. However, subjects did report that this manipulation would have a negative impact on relationship closeness not only for the parent-underbenefited offspring relationships but also for some of the sibling relationships. In addition, subjects did not 'like' the father as much when he treated his children differently as in the equal treatment condition. This presumably reflects some disapproval of the father's actions, and suggests that the differential parental investment portrayed in the story was perceived as inequitable treatment of the offspring.

According to evolutionary models, differential valuation of offspring is expected in some circumstances. Several variables have been hypothesized to affect parental investment in offspring, including differential need and differential ability to translate parental investment into fitness (for discussion see Daly & Wilson 1995). Cues of genetic relatedness are expected to modulate parental investment, which is the reason why genetic relatedness was manipulated in the present study. Information about genetic relationships did not have a significant effect on subjects' resource allocation decisions in the different parental investment conditions. It should be noted that it is unlikely that the absence of an effect was due to an ineffectiveness of the genetic relationship manipulations, for the expected 'sibling deception' by 'genetic relationship' interaction did emerge. What I believe these findings show is that differential valuation and treatment of offspring is perceived as inequitable treatment of offspring and evokes a negative reaction, but is likely to be viewed as a legitimate parental privilege.

Sibling deception.

The second way in which (in)equity was created among siblings was by manipulating cues of sibling deception. More specifically, the younger brother, who received a gift or a loan depending on the parental investment condition, either revealed his parental investment (honest condition) or hid this parental investment (deception condition) from his other siblings. In addition, the genetic relationship of the siblings was manipulated in order to determine whether the deception would be judged to be an equal violation of half sibling and full sibling relationships. Again, the magnitude of the violation or perceived inequity was measured through subjects' resource allocations among the siblings and their judgements of the closeness of the sibling relationships.

The main effect of sibling deception indicated that subjects "punished" the deceptive son with a smaller allocation of the estate. The fact that the deceptive son was allocated less of the familial funds is not a particularly surprising result. One of the areas most studied by evolutionary psychologists has been cheating in social relationships. In particular, Cosmides (1989) and Cosmides and Tooby (1987) have provided considerable support for the idea that the mind has a special competence for detecting cheating in social exchanges. The results also showed that sibling deception caused subjects to judge both half sibling and full sibling relationships as less solidary in the deception conditions than in the no deception conditions. Clearly, the sibling deception presented in the stories was viewed as a violation of sibling relationships.

The most interesting result is the interaction between deception and relatedness in their effects on how subjects reallocated the money. When all three children were the father's genetic offspring, sibling deception did not affect subjects' allocation decisions. It was *only* when the dishonest sibling deceived half siblings that he was 'punished' (i.e., allocated fewer funds). The daughter who was also the father's genetic offspring received an allocation of about one third of the estate, *even though her half sib was given a larger allocation*. It appeared as though members of the family were categorized according to their genetic relationship with the closer genetic relatives being viewed as a 'coalition' when there was discrimination against the stepchild. Perhaps the differential treatment of the stepchild activated psychological mechanisms in the observer that signaled competing interests between members of an in-group and members of an out-group. However, there are several important limitations that prevent conclusions regarding this hypothesis, including the sex of the offspring, the amounts of the investments, and the reasons for the parental investments which were not held constant for all of the offspring. An alternative explanation might be that funds were not given to the deceived sister because she was female. To address this alternative, a second study was conducted with exactly the same methodology and stories as the first study except that this time the genetic relationship of the offspring was changed so that the daughter *and* the eldest son were both the father's stepchildren and half siblings to the 'deceptive' youngest brother. All other conditions were kept constant. If my hypothesis is correct and the subjects were 'punishing' the younger brother only when he deceived half siblings, the brother

would again have funds 'taken away' in study 2, and furthermore, both the half brother and half sister to the 'deceptive' brother would receive greater proportions of the estate than these same characters would be given when sibling deception was absent.

Study Two: Methods

Subjects.

Ninety eight students enrolled in an introductory psychology course viewed the fictive photo-story and completed the questionnaire in return for course credit. The mean age of the 69 female and 29 male students was 19.9 years (ranging from 18 to 41 years)⁴.

Procedure.

The procedure and dependent measures were identical to those of study 1.

The electronic photo-story.

The electronic photo-stories were identical to study 1 with respect to the 'parental investment' and 'sibling deception' manipulations. The only exception was that there was only one variant for 'genetic relationship'. In all the study 2 stories both the eldest brother and the middle-born daughter were from the deceased mother's first marriage and were not genetically related to the father. Both would share 25% of their genetic material with their half brother (the youngest son) but were themselves full genetic siblings. A synopsis for study 2 is presented in the lower portion of Table 4.1.

⁴ Since there were no sex differences in study 1, this uneven sex ratio should not be problematic.

Study 2: Results

Differential parental treatment of siblings.

Attributions of closeness of parent-offspring relationships. The lower half of Table 4.2 portrays the mean judgments of closeness for the three parent-offspring relationships. As in study 1, the father-daughter and father-eldest son relationships were judged to be more distant in the 'differential parental investment' conditions where these offspring had been given less than their younger brother than in the 'equal investment' conditions when all the offspring were treated the same. This effect was significant for the father-daughter relationship ($F(1,98) = 4.72, p=.03$), and almost so for the father-eldest son relationship ($F(1,98) = 3.59, p=.06$). *Unlike study 1*, subjects did not judge the relationship between the father- and his full genetic offspring to be closer in the 'differential parental investment' condition where he was given a gift that his siblings did not get than in the 'equal parental investment' condition where this son was treated the same as his brother and sister ($F(1,98)=1.62, p = .21$).

Attributions of closeness of sibling relationships. In study 1, a main effect of 'differential parental investment' emerged only for the 'preferred' brother-half sibling relationship. In the current study, both of the 'preferred' youngest brother-'non-preferred' sibling relationships were judged as likely to become more distant in the differential parental investment conditions than in the equal parental investment conditions ($F(1,98)=26.20, p<0.001$ for the brother/sister relationship and $F(1,98)=35.80, p<.001$ for the brother/brother relationship). The mean ratings of

sibling relationship closeness as a function of type of parental treatment are shown in the lower half of Table 4.2. Furthermore, post-hoc t-tests showed that both of the 'preferred' son - 'non preferred' sibling relationships decreased more when the younger son was honest about a gift than when he was honest about a loan ($t(47)=-3.11$, $p<0.01$ for the brother/sister relationship and $t(47)=-4.2$, $p<0.001$ for the brother/brother relationship). These effects are portrayed in Figure 4.3. Recall that in the condition where the 'preferred' son was honest about having received a gift from their father he paid back this gift to the estate. Therefore, even though the brother paid back this money, subjects judged that differential parental investment in offspring would decrease the closeness of the 'preferred' sibling - 'non preferred' sibling relationships.

 Insert Figure 4.3 here.

Likeableness of the father. As in study 1, subjects again reported that they did not 'like' the father as much when he treated his children differently (mean = 5.05, SD = 1.54) as in the equal treatment condition (mean = 5.87, SD = 1.17) [$F(1,98) = 8.45$, $p = .005$].

Resource allocation task. The first study showed that there was a trend for subjects to attempt to restore equity among the siblings when they had been treated inequitably by their father, but the effects did not reach significant levels. The results of study 2 showed that the favoured son got significantly less funds when he kept the parental gift than when he paid the gift back to the estate $t(49)=2.85$, $p<.01$. Both

'non-preferred' siblings got more money when the 'preferred' sibling kept the gift than when he paid the money back to the estate (for the daughter, $t(49)=-2.48$, $p<.05$; and for the son, $t(49)=-2.35$, $p<.05$). These results (Figure 4.4) indicate that subjects reallocated funds to establish equity among the siblings when there was differential parental investment. Also, the 'preferred' son did not get more funds when his father gave him a gift that his siblings did not receive than when he was treated equally to his siblings, $t(49)=1.34$, $p>.05$, indicating that subjects did not model their allocation decision after the father's decision by giving additional funds to the 'preferred' brother.

 Insert Figure 4.4 here.

Sibling Deception.

Attributions of closeness of the sibling relationships. As in study 1, subjects again judged that the closeness of the sibling relationships would decrease if sibling deception occurred. The youngest 'deceptive' brother- 'honest' sister relationship and youngest 'deceptive' brother- 'honest' eldest brother relationships were judged likely to become significantly more distant when the youngest brother deceived ($F(1,98)=20.52$, $p<0.001$ and $F(1,98)=35.80$, $p<0.001$, respectively).

Interestingly, this time the significant parental investment times sibling deception interaction was on judgements of relationship closeness between the two half siblings ($F(1,98)=10.90$, $p<.001$). The relationship between the two stepchildren (full genetic sibs to each other) was expected to become closer after they had found

out that their brother had deceived them about his loan or after finding out that they had been treated differently from him. Figure 4.3 portrays this effect.

Resource allocation task

As in study 1, subjects 'took funds away' from the youngest brother when he was deceptive, $F(1,98)=12.08$, $p<.001$. In study 1 the funds 'taken away' from the youngest brother were re-allocated to the half brother whereas the deceived full genetic sister was not allocated more funds. In the current study where both the older brother and middle sister were now the youngest 'deceptive' brother's half siblings (but full genetic siblings to each other), both were now reallocated funds that were 'taken away' from the deceptive brother. The sister was given significantly more funds when she was deceived by her half brother ($F(1,98)=15.78$, $p<.001$) and the eldest brother was also given more funds when deceived by his half brother ($F(1,98)=2.82$, $p=.10$) although not quite significantly so. Relative distributions across offspring according to sibling deception for each of the three manipulations of genetic relationship conditions are illustrated in Figure 4.5.

 Insert Figure 4.5 here.

Discussion

Sibling Deception

The results of study 1 showed that when all three children were the father's genetic offspring, sibling deception did not affect subjects' allocation decision. In contrast, when this same sibling deceived a half sibling he was punished (i.e., was allocated fewer funds). Furthermore, when the amount of funds given to the deceived siblings was examined to see who received the funds that were taken away from the

deceptive brother, it was clear that subjects were not allocating funds equally among the deceived offspring. The deceptive brother's full sister did not receive extra funds. Only the deceived half brother received a larger allocation. As there were a number of variables that differed among the offspring in study one, study two was conducted to see if changing only the genetic relationship of the daughter to a stepchild would cause subjects to give her more funds as well. As expected, the results of study 2 indicated that subjects 'punished' the deceptive brother when he deceived his two half siblings, and both the half brother *and* half sister received a greater allocation of funds. Therefore, when the daughter was portrayed as the father's genetic offspring her allocation continued to be about one third of the estate, even though her half sib was given a larger allocation (study 1), but when she was also portrayed as a stepchild (study 2), the funds taken from her deceptive brother were reallocated so that both she and the other stepchild received a greater proportion of the money than their dishonest brother.

This should not be taken to mean that deception between full siblings was not perceived as a violation. Although subjects did not 'punish' the brother for deceptively and selfishly withholding resources from his full siblings, subjects did predict that such deception would negatively affect the closeness of their relationships just as it would for half siblings. As discussed earlier, based on Hamilton's theory of inclusive fitness (1964), one might expect that resource inequities are not as likely to be viewed as transgressions in kin relationships. The genetic ties of kinship (i.e., the reproductive benefits to be gained through inclusive fitness) ensure that we will have a vested interest in our kin's welfare. Perhaps for this reason subjects may have been

more likely to expect restoration of full sibling relationships and it seemed less likely that the half siblings could resolve the difficulty without 'outside' intervention prompting subjects to restore equity within these relationships.

Differential Parental Investment.

In contrast to study 1 where inequity due to differential parental investment in offspring was not strongly reacted to, subjects in study 2 reallocated funds among the siblings to restore equity when the father treated his offspring differently. Subjects of study 1 tended to reallocate funds to restore equity among offspring when their father treated them differently, but not significantly so. The results of study 2 indicated that subjects have a strong tendency to do so.

As discussed earlier, people treat their kin differently than they treat non-kin. Kin are expected to give closer kin preferential treatment. While in some situations an observer might think this is appropriate behavior (e.g., parents pay for their own children's college tuition rather than their neighbour's tuition), in other situations this differential treatment may be judged as being inappropriate discrimination (e.g., Cinderella). One possible reason for the differences in the results of these two studies is that in study two subjects were more likely to make the attribution that the reason for differential treatment was genetic relationships. In the first study, the father only treated one of his genetic offspring preferentially. His genetic daughter was not given a gift. This difference in the father's treatment of the two genetic offspring may have caused some subjects to attribute the reason for the differential treatment to some cause other than genetic relatedness. This seems especially likely in light of the fact

that there were no other obvious reasons for differential treatment. In the second study it was probably much more likely that subjects judged the reason for differential treatment as genetic relationships because the genetic offspring was treated preferentially compared to the two stepchildren who were both treated the same. If one then assumes that, on average, subjects did not agree with differential parental investment the differences in the results for the two studies seem understandable.

Although subjects of the present study did not appear to be strongly motivated to restore equity among siblings when all the siblings were the father's full genetic offspring this should not be taken to mean that subjects approved of the differential treatment. Subjects' judgements of parent-offspring relationship closeness and the likeability of the father varied according to the parental treatment manipulation which implies that although subjects did not choose to restore equity among the offspring they were sensitive to the intended parental investment manipulation and probably did not approve of the father's differential investment in his offspring.

Conclusions

Limitations of the study.

It is not possible from the present results to conclusively determine the perspective taken by subjects when answering the questions. Although the story and resource allocation task were framed in such a manner that the subjects were to take the role of an observer it is possible that they could have adopted the perspective of one of the characters. It would be interesting to systematically investigate how manipulating the

participant perspective affects perceptions of equity and entitlements. In the current study the perspective of the participant could have easily been manipulated by changing the narrative in such a way that the story was being told from the different siblings' perspectives and explicitly changing the perspective in the resource allocation task. For example, the stepchild or the favored child could be telling the story instead of it being written in third person.

In addition, it would be interesting to explore whether subjects who were stepparents, half siblings or stepchildren would react differently to the inequities than others. Equity theory does not address whether both a favoured sibling and the other siblings would be similarly motivated to restore equity in order to preserve sibling solidarity. The prediction derived from parent-offspring conflict theory whereby offspring are expected to value self over siblings would suggest that an under-benefited sibling would desire a re-allocation of the estate to offset the unfavourable prior parental treatment. The favoured siblings may not feel the same way. A parent's perspective is different from that of the child; siblings value self over other siblings but parents should value all children equally if the statistically expected fitness benefits of a unit of investment are equivalent. If a father bestowed economic assets among his children unequally then he may be modulating his investment according to cues of the expected fitness returns in ancestral environments. Unfortunately, in the current study the numbers of subjects who themselves were parents or stepchildren were too few to explore these hypotheses.

Concluding Comments.

These results seem to suggest that inequities in familial relationships are reacted to particularly strongly when they occur in conjunction with differences in genetic relationship. In general, the findings of the present study do point to the importance of including dimensions such as genetic relationship in future research aimed at developing a better understanding of equity and entitlements in close relationships. According to evolutionary models, cues of genetic relatedness are expected to influence expectations of resource exchange. This has important implications for studies of equity within close relationships. As suggested by the results of the current study, deviations from equity may be more likely to be judged a violation (and/or impel restoration of equity) within distant kin or non-kin relationships than close kin relationships. Future studies can benefit from considering how judgements of (in)equity will be influenced by differential expectations of resource exchange in different types of relationships.

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Table 4.1

Electronic-photo story synopsis illustrating the different conditions of the between group experimental design.

Genetic Relationship (father/offspring)	Gift (gift to one son and Loans to other offspring)		Loan (loans to all offspring)	
	Honest (all reveal investments)	Deception (‘preferred’ son hides gift)	Honest (all reveal their loans)	Deception (‘preferred’ son hides loan)
Study one				
Three Genetic Offspring	Story 1 N=28	Story 2 N=25	Story 3 N=33	Story 4 N=27
Two Genetic and one Step Child	Story 5 N=24	Story 6 N=29	Story 7 N=33	Story 8 N=29
Study two				
One Genetic and two Step Children	Story 9 N=26	Story 10 N=25	Story 11 N=23	Story 12 N=24

Table 4.2

Mean judgements of closeness of the relationships among the story characters before the father's death, according to differences in parental investment (larger values indicate closer relationships) for study 1 and study 2.

Relationship Type	Discriminative Parental Investment		Equal Parental Investment		Sig.
	M	SE	M	SE	
Study One					
Parent-Offspring					
father – youngest 'preferred' son*	5.99	0.11	5.56	0.11	p < .01
father – daughter	5.02	0.12	5.80	0.11	p < .001
father – eldest son	5.02	0.12	5.59	0.11	p < .001
Siblings					
youngest 'preferred' son* - sister	-1.11	.17	-.861	.16	p = .328
youngest 'preferred' son* - brother	-1.59	.16	-.73	.15	p < .001
Study Two					
Parent-Offspring					
father – youngest 'preferred' son*	5.90	0.20	5.53	0.21	p = .206
father – daughter	5.22	0.19	5.80	0.20	p < .05
father – eldest son	5.20	0.19	5.70	0.19	p = .061
Siblings					
youngest 'preferred' son* - sister	-1.46	.22	-.41	.23	p < .001
youngest 'preferred' son* - brother	-1.70	.20	-.53	.21	p < .001

* the 'preferred' offspring received parental gift in discriminative parental investment conditions. For study 1 N = 228, for study 2 N=98.

Figure Legend

Figure 4.1. Changes in sibling relationship closeness for A) youngest 'deceptive' brother - eldest brother, and B) youngest 'deceptive' brother - sister, according to 'differential parental investment' and 'sibling deception.' (Study 1)

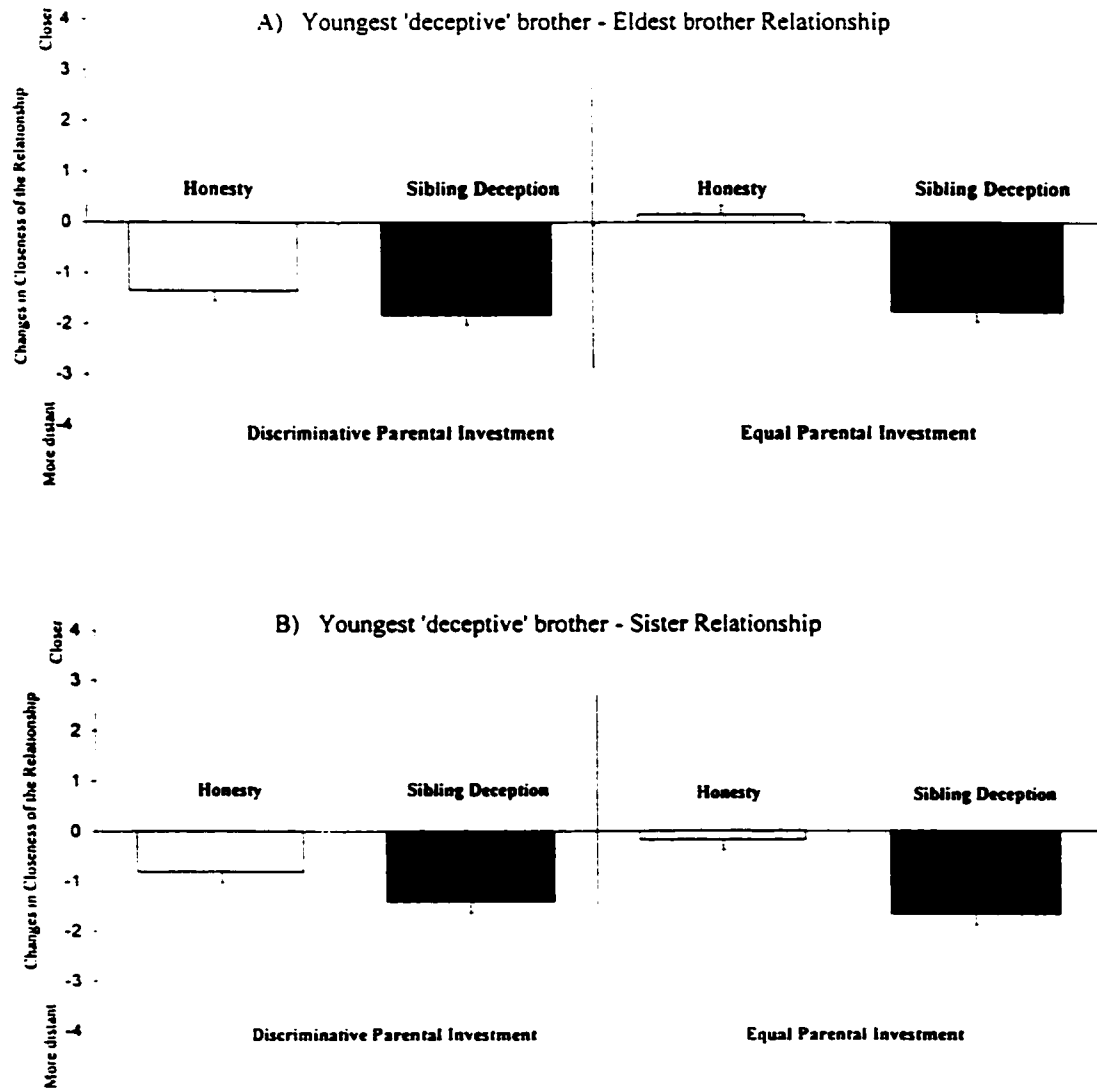
Figure 4.2. Mean fund allocations to A) youngest 'deceptive' brother, B) eldest brother, and C) sister, according to 'genetic relationship' and the presence or absence of 'sibling deception.' (Study 1)

Figure 4.3. Changes in sibling relationship closeness for the two step children (full genetic siblings to each other) according to 'differential parental investment' and 'sibling deception.' (Study 2)

Figure 4.4. Mean fund allocation to A) youngest 'deceptive' brother, B) eldest brother, and C) sister, according to the presence or absence of 'sibling deception.' (Study 2)

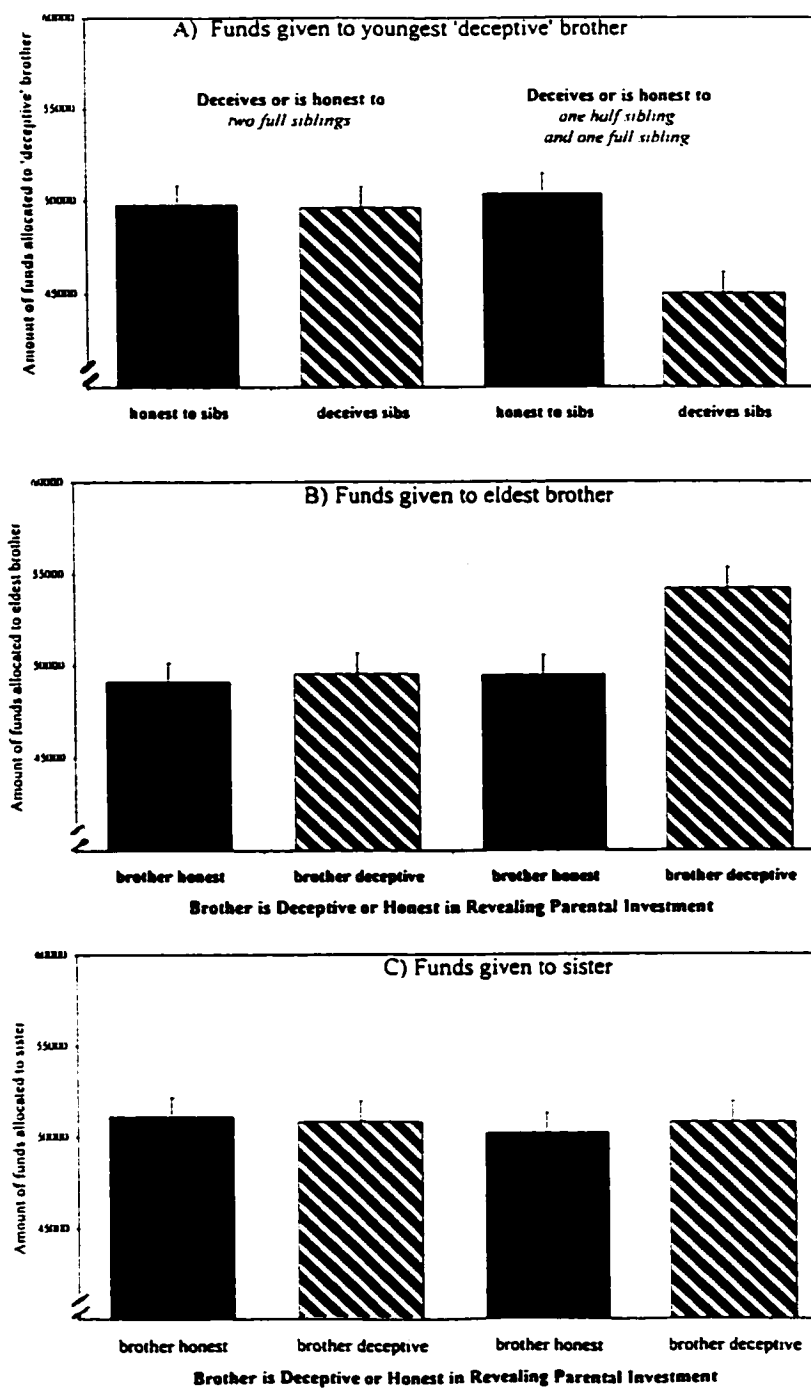
Figure 4.5. Mean fund allocation to A) youngest 'deceptive' brother, B) eldest brother, and C) sister, as a function of the presence or absence of 'sibling deception.' (Study 2)

Figure 4.1. Changes in sibling relationship closeness for A) youngest 'deceptive' brother - eldest brother, and B) youngest 'deceptive' brother - sister, according to 'differential parental investment' and 'sibling deception'. (Study 1)



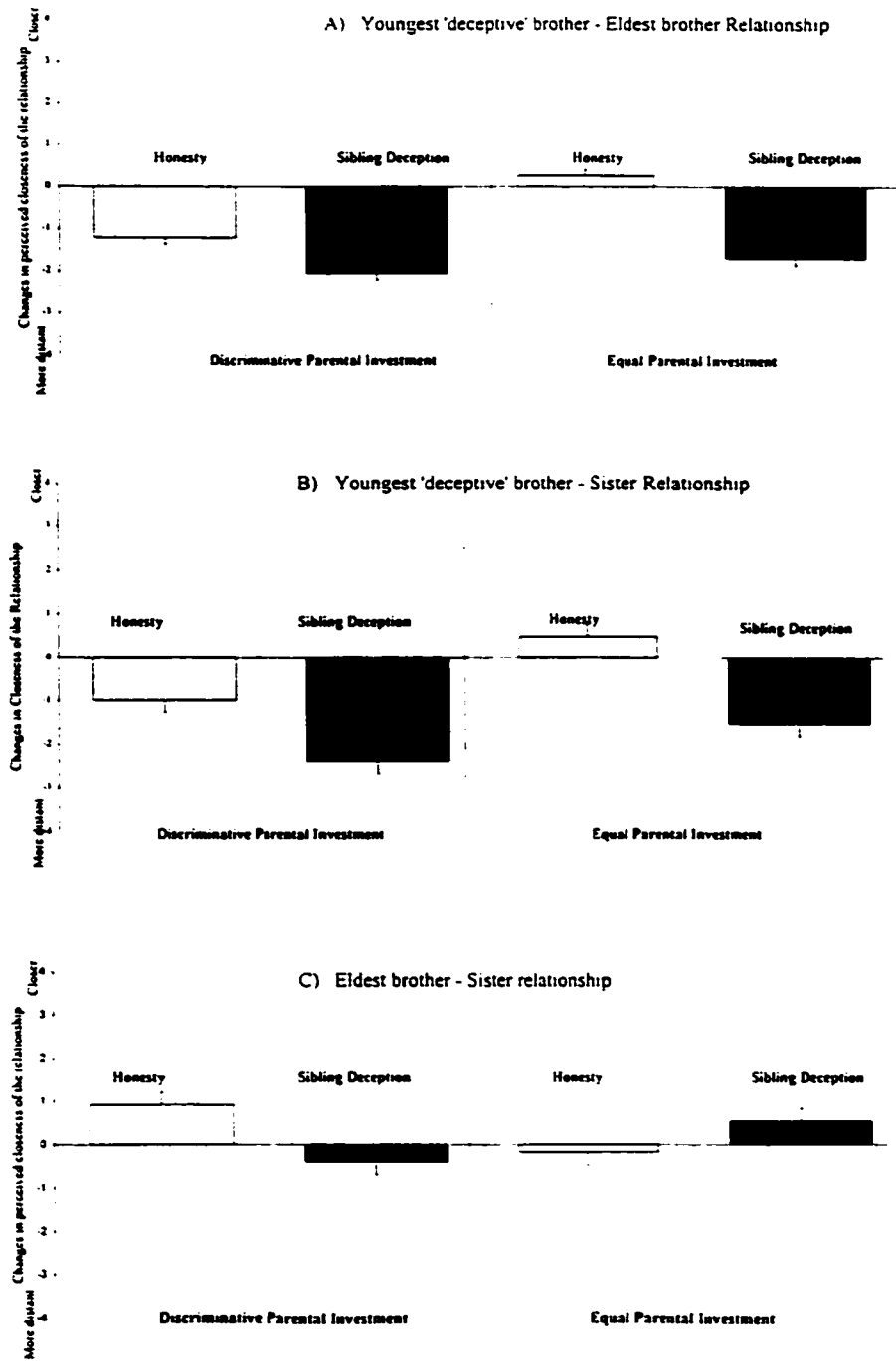
* This brother received a gift or a loan depending upon the parental investment condition, and was deceptive or honest about this investment depending upon the sibling deception condition. Note. Bars represent one standard error.

Figure 4.2. Mean fund allocations to A) youngest 'deceptive' brother, B) eldest brother, and C) sister, according to 'genetic relationship' and the presence or absence of 'sibling deception'. (Study 1)



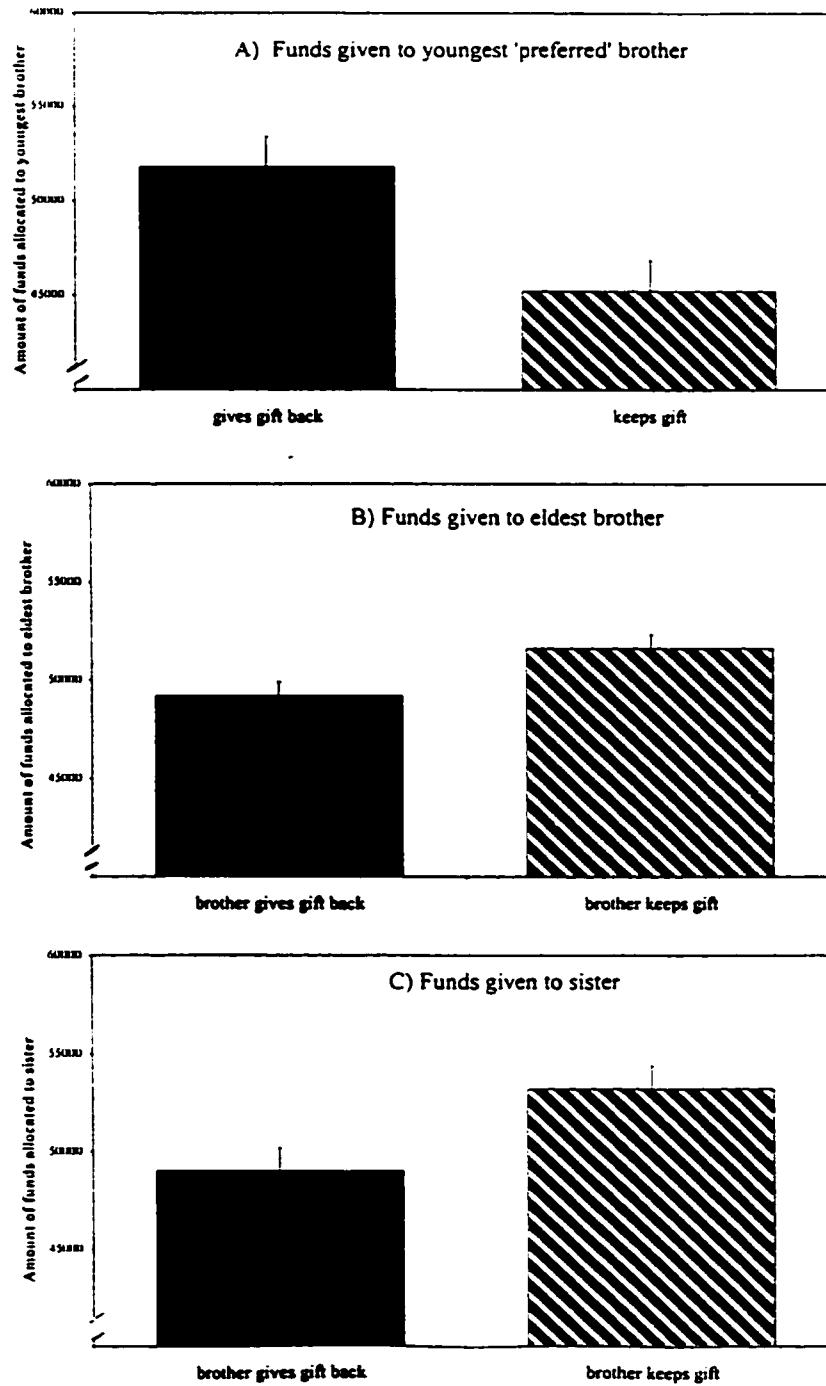
Note. Error bars represent one standard error.

Figure 4.3. Changes in perceived closeness for each of the three sibling-sibling relationships. (Study 2)



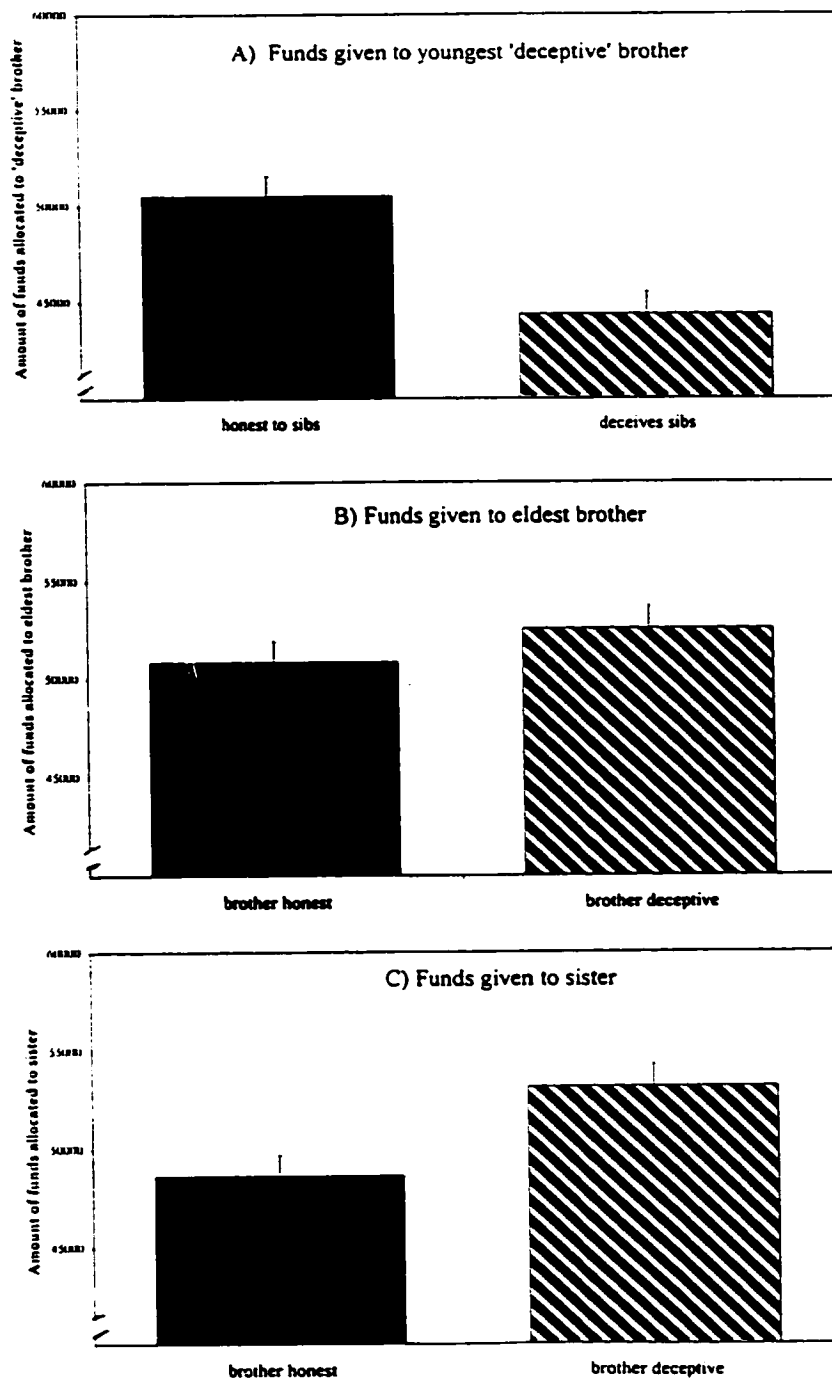
• These are full genetic siblings

Figure 4.4. Mean fund allocation to A) youngest 'preferred' brother, B) eldest brother, and C) sister, as a function of whether the youngest brother kept the parental gift or paid the gift back. (Study 2)



Note. Bars represent one standard error.

Figure 4.5. Mean fund allocation to A) youngest 'deceptive' brother, B) eldest brother, and C) sister, as a function of the presence or absence of 'sibling deception.' (Study 2)



Note. Bars represent one standard error.

CHAPTER V

Conclusions, Implications and Directions for Future Research

In the preceding three chapters, 5 different studies were presented investigating college students' sensitivities to inequities in social exchange in their own relationships and as observers of others. The results indicated the following:

1. *The type of relationship matters.* In reporting about their own relationships, participants were not equally concerned about reciprocation in all of types of relationships (Chapter 2). The results from both study 1 (utilizing a between-subjects design) and study 2 (using a within subjects design) indicated that people were less concerned that kin and close friends reciprocate benefits than that acquaintances do so. Interestingly, however, the latter two -- expectations of reciprocation in close friendships and in kin relationships -- did not differ from each other, at least in the way social exchange expectations were assessed in these studies.

Similarly, when participants were in the observer's role reacting to perceived inequities in other people's relationships, the type of relationship was again important (Chapter 4). Here the experimental variation was in degree of genetic relatedness. Subjects engaged in 'distributive justice' (taking funds away from those who were overbenefited and redistributing these funds to those who were underbenefited) only when a half sibling was underbenefited and not when a full sibling was treated in this way.

2. *Personality also matters.* Personality traits indicative of greater sensitivity to threats in social relationships were differentially associated with sensitivity to being underbenefited in different types of relationships (Chapter 2). Compared with other participants, high shy/high sociable individuals (those who experience high levels of social anxiety) were more concerned about reciprocation in acquaintance relationships than were other subjects, but they were similar to others in their responses concerning kin relationships and close friendships. Again, the patterning of the data showed that the latter two conditions did not differ from each other, revealing a consistency with the findings of the research described above that had not included a personality dimension.
3. *Frequency of contact affects expectations only in acquaintance relationships.* Frequency of contact with another (which increases the probability that reciprocation can occur) did not equally affect all the relationships studied (Chapter 2). Only in acquaintance relationships was more contact associated with less concern about reciprocation. This dimension therefore also replicated the recurring pattern wherein acquaintances differed from kin and close friendships, but these two types of relationships did not differ from each other.
4. *Expectations of reciprocation change as friendships develop.* In studying the development of non-kin relationships over time, it was found that students' expectations that others reciprocate and feel obligated to reciprocate changed over time (Chapter 3). Indeed, the direction and degree of change in expectations was particularly "diagnostic" of the trajectory of friendship development. Students who

became less concerned that their roommates [and neighbours] reciprocate over time and/or felt more obliged to reciprocate, became better friends. In contrast, students who became more concerned that their roommates [or neighbours] reciprocate favours, and/or felt less obliged to reciprocate, became worse friends. The direction of these changes in this “within subjects” longitudinal design closely follows what would be predicted on the basis of the data pattern in the “between subjects” design found in the other studies summarized above. More specifically, in those relationships that progressed from acquaintanceship to closer friendship, concern about receiving reciprocation showed similar patterns to the data obtained in the earlier research comparing acquaintances and friendships.

5. *Reciprocity expectations are not necessarily detrimental to friendship development*

In the context of neighbour relationships, a higher level of concern that reciprocation occur (high UEO) was generally negatively associated with the quality of neighbour friendships. In contrast, a higher level of concern regarding reciprocation among roommates was not necessarily detrimental to their relationship quality. Cross-sectionally, roommate reciprocation concerns at the initial assessment period (7 days after meeting) were unrelated to feelings about the quality of the relationship. Moreover, contrary to a ‘stable trait’ model of exchange orientation, roommates’ concerns about being underbenefited early in their relationship (i.e., seven days after their initial meeting) were actually positively correlated with their friendship quality assessed months later (assessed 75 days after meeting). It was only

assessments of concern that reciprocation occur later, after roommates had spent some time together, that were negatively correlated with friendship quality at time 2.

In addition, supporting Sprecher's modifications of Exchange Orientation theory, high levels of overbenefiting exchange orientation were positively associated with friendship quality, for both roommates and neighbors (cross-sectionally and longitudinally).

As should be apparent to the reader on the basis of the summary provided above, a recurring finding in this series of studies is that the major differences that emerged were between acquaintance relationships and kinship and/or close friendships, with these latter two types not differing from each other. This is a particularly interesting finding that has not been discussed at length heretofore and will serve as the primary basis for the current discussion. The discussion below touches upon some of the factors that may help explain why in the present series of studies, the data for close friendships consistently paralleled kin relationships.

Short-term vs. Long-term Reciprocity. Since people do not generally gain reproductive benefits by investing in non-kin (other than in mateships, of course), it is expected that people will not be as likely to invest in non-kin unless reciprocation is deemed to be forthcoming (Trivers, 1971). However, the results of chapter 2 (studies 1 and 2) indicated that people were no more concerned about receiving reciprocation from close friends than they were from their kin. In addition, in chapter 3, roommates and neighbours who became better friends were not as concerned that reciprocation occur over time. What seems necessary for understanding these results is a distinction between

the functions of short term and longer-term cooperative alliances. Cooperative alliances can range from one social exchange interaction (e.g., a one shot prisoner's dilemma game), through somewhat longer term relationships with specialized functions, to long-enduring relationships that are characterized by numerous exchanges of various types.

Some relationships may be useful in the short term. Students often have acquaintances with whom they share class notes or with whom they car pool to school. People have relationships with colleagues at work, teammates in sports, particular salespeople and so on. These types of relationships may not extend much beyond these contexts. In these relationships, the partners share a specific need and 'the function' of the relationship is to fulfill this specific need for each partner. If one of the students dropped out of university and therefore was no longer in need of notes or a ride to school, or if a favorite salesperson stopped giving 'good deals,' it would not be surprising to learn of relationship dissolution. Similarly, in a one shot prisoner's dilemma game one would certainly not be surprised to learn that a player defected if he or she learned that the partner had done so. The point is that some relationships are 'specialized' or short-term and there is no other commitment to the relationship.

Close friendships typically have a much longer duration, and have multiple functions. One of the scales used in measuring friendship quality in the current paper was Mendelson and Aboud's (1999) partnership scale, which measured several different functions of friendships. This scale which has been demonstrated to distinguish between different types of friendships (e.g., best friends versus casual friends) does so by quantifying the variety and level of social exchange among friends. Close friendships are

more often characterized by extended exchange of varied resources, and are likely to include larger investments than acquaintance relationships. In contrast to short-term or 'specialized' friendships, the needs of close friends can span over much longer time intervals. As discussed in chapters 2 and 3, because investment in close friends can be larger and the delay before reciprocation longer, the 'choice' of a reliable long term friend is particularly important. It is expected that the development of friendships will occur over time with increasing investments only after previous investments have been reciprocated (Roberts & Sherrat, 1998). In this way people can avoid incurring substantial costs by investing heavily in a person that may not be a reliable exchange partner. Presumably, this process had begun to occur between the new roommates in chapter 3. It was those roommates and neighbours who (over time) became less concerned about reciprocation and more focused on "returning" benefits that developed better friendship quality.

The underbenefiting exchange orientation scale used in the present studies to measure how concerned people were that others reciprocate primarily assessed a relatively "short term" accounting of reciprocity exchange (while in a couple of items there is considerable vagueness about this dimension). For most of the items, respondent are asked to imagine how they would feel if their partners had not reciprocated 'a favour', 'did not show up on time for an appointment', or did not return a particular resource (e.g., a dinner out). In other words, the items ask subjects to imagine that they are underbenefited in terms of one social exchange item. The scale does not enable one to distinguish people willing to allow resource inequities to exist on a short-term basis from

those who might allow inequities to exist indefinitely, nor clearly distinguish a person who tolerates single “short term” inequities from one who tolerates successive inequities over time.

Close friends who may not use a “short term calculus” and may thus overlook various individual instances of inequities, may still expect reciprocation, but the nature of the accounting may be more complex and longer term. The fact that the exchange orientation scale does not distinguish between short term and long term accounting may help explain the lack of differences repeatedly found in kin relationships and close friendships. I predict that a research instrument designed to more specifically assess such distinctions will reveal differences between kin and close friendship relationships in reciprocity expectations and calculations. To more fully explicate this prediction requires some illustration of what more “complicated reciprocity calculations” might entail.

An insurance policy. Tooby & Cosmides (1996) hypothesized that an important function of long-term friendships may be as ‘an insurance policy’ against emergencies in the future, i.e., a ‘chit’ that people hope they will never have to cash in. In these long-term relationships, it is particularly important to choose a reliable exchange partner and not a ‘fair-weather friend’ that would reap benefits over time but not fulfill expectations in an emergency. Again, it is not that friends of this type are not concerned about reciprocation; they would certainly expect help in an emergency situation, but the nature of the expectations is different. What seems most important for choosing this type of friendship would be evidence of the friend’s honesty and commitment to the relationship. The idea that a close friend is someone that you can trust is exemplified in the following

passage in which a student describes his idea of what a friend is. According to this student, a close friend is “a person you know well, usually have known for several years because it takes a long time to figure out that you can really trust and you can rely on this person. It’s somebody you can almost always call or visit and ask him or her to do you a favor. It’s somebody you like to be together with and feel safe in his company, or her company.” (Gareis, 2000, p. 79) Another student describes close friends as having “the positive knowledge that whenever I’m in trouble or one of them is in trouble, I would try everything to help them out, whatever that might be, and I know they would do the same thing for me” (Gareis, 2000, p. 82). The exchange orientation scale that was used to measure expectations of reciprocation in the present studies did not measure how much a person can count on another to help out in emergencies. This may be an important area that should be added to the development of future scales that include measurements of long-term reciprocity calculations. Although it may well be that both kin and close friendships provide “insurance” for emergency-type situations, friendships have more expectations of reciprocation than kinships.

The size of investments. A related finding in the current studies (chapter 2, studies 1 and 2) was an absence of differences in the amount of concern that students had about reciprocation in sibling and in cousin relationships. Hamilton’s theory of inclusive fitness suggests the hypothesis that people should be more concerned that cousins reciprocate than that siblings do. It is important, however, to keep in mind that Sprecher’s exchange orientation measured “smaller” types of investments. As noted above, the majority of the items contained in the scale are probably best described as

social exchange situations of a day to day nature that require investments that are not trivial, but also do not require substantial investments either (e.g., a favour, a dinner out, a drive to work). When the cost of investment is low, a person could profit from investing in a sibling or cousin without expecting reciprocation. For low cost investments, Hamilton's rule ($c < rb$) may be fulfilled not only for siblings, but also for cousins, too. For larger investments (e.g., when $c > rb$), kin are predicted to expect reciprocation as well. Therefore, one explanation for the absence of the predicted effect is that Sprecher's scale does not contain high investment items that would distinguish between the two types of kin relationships. A scale with higher costs might therefore differentiate between expectations and obligations in different types of kin relationships (as well as perhaps distinguishing between some aspects of friendships and kin relationships).

To reiterate, then, one important direction for future research would be to modify the exchange orientation scale to include items that tap into these larger and longer-term types of investments and expectations of help in inconvenient situations and in times of real need (i.e., in emergencies). Perhaps with such modifications one could distinguish between social exchange expectations for different types of kin relationships and friendships.

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APPENDIX A: QUESTIONNAIRES

i. Exchange Orientation Questionnaire (Sprecher, 1998)

Underbenefiting Exchange Orientation Scale Items (UEO)

I usually do not forget if someone owes me a favor.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I have something to offer the relationship that my partner is incapable of also giving (e.g., money, status, physical attractiveness) I expect him or her to compensate by giving other things in return.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

I usually remember if someone owes me money.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I take a friend out to dinner, I expect him/her to do the same for me sometime.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

When I exchange gifts with a significant other on an important occasion (Christmas, anniversary) I feel bad (cheated) if I have spent significantly more money on him/her than he/she has on me.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If someone owes me a favor, I don't mind if he/she waits a long time before repaying.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me
(reverse scored)

It bothers me if people don't fulfill their obligations to me.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I were to campaign for someone running for office, I'd expect some sort of compensation, or at least recognition.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I tell someone about my private affairs (business, family, love experiences) I expect him/her to tell me something about his/hers.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I'm out to dinner with a close friend, I would much rather that he/she paid the bill entirely than if I paid the bill entirely.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

I prefer not to send a second letter to a friend unless I had received a letter or phone call in response to my first letter.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

When I invite someone to dinner at my house, I prefer that he/she offers to bring something (wine/dessert).

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I praise a friend for his/her accomplishments, I expect him/her to praise me for mine as well.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I give someone a ride to work on an occasional basis (approximately 6 times a month), then I expect him/her to repay me in some way.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

I wish people would show more acknowledgment when I say or do nice things to them.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

It bothers me if people I like do less for me than I do for them.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

When buying a present for a someone I often try to remember the value of what he/she has given me in the past and try to buy something of more value.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I show up on time to meet someone, I become upset with that person if he/she shows up late.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

Overbenefiting Exchange Orientation Scale Items (OEO)

I usually do not forget if I owe someone a favor.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If my partner has something to offer the relationship that I'm incapable of also giving (money, status, physical attractiveness) I would try to compensate by giving other things in return.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

I usually remember if I owe someone money.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If a friend takes me out to dinner, I expect to do the same for him/her sometime.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

When I exchange gifts with a significant other on an important occasion (Christmas, anniversary) I feel bad (guilty) if I have spent significantly less money on him/her than he/she has on me.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I owe someone a favor, it doesn't bother me to wait a long time before repaying.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me
(reverse scored)

It bothers me if I don't fulfill my obligations to other people.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If someone were to campaign for me running for office, I'd expect to give compensation or at least recognition in return.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If someone tells me about his/her private affairs (business, family, love experiences) I expect to tell him/her something about me.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I'm out to dinner with a close friend, I would much rather pay the bill entirely than have him/her pay the bill entirely.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

I prefer that a friend does not send a second letter before I have had a chance to send a letter or make a phone call in response to his/her first letter.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

When I go to dinner at someone's house, I prefer to bring something (e.g., wine/dessert).

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If a friend praises me for my accomplishments, I make sure to remember to praise him/her for his/her accomplishments as well.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If someone gives me a ride to work on an occasional basis (approximately 6 times a month), then I expect to repay him/her in some way.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

I try to show people acknowledgment when they say or do nice things to me.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

It bothers me if people do more for me than I do for them.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

When buying a present for someone, I often try to remember the value of what he/she has given me in the past and try not to buy something of less value.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

If I'm late to meet someone, I get upset with myself.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ Sounds very much like me

UEO items not included

If my partner feels entitled to an evening out with friends of either sex, then I feel entitled to do the same.

If I do dishes three times a week then I expect my partner to do them three times a week also (or something equivalent).

OEO items not included

If I feel entitled to an evening out with friends of either sex, then I feel my partner should feel entitled to the same.

If my partner does dishes three times a week, then I expect to do them three times a week also (or something equivalent).

ii. Shyness and Sociability Questionnaires

Five highest loaded items (Bruch, Gorsky, Collins, & Berger, 1989) from Cheek's (1983) Shyness Scale.

I find it hard to talk to strangers

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

When I'm in a group of people, I have trouble thinking of the right things to talk about.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

I feel nervous when speaking to someone of authority.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

I feel inhibited in social situations.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

It takes me long to overcome my shyness in social situations.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

Cheek and Buss's (1981) Sociability Scale

I like to be with people.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

I welcome the opportunity to mix with people.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

I prefer working with others than alone.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

I find people more stimulating than anything else.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

I'd be unhappy if I were prevented from making any social contacts.

Sounds not at all like me ① ② ③ ④ ⑤ ⑥ ⑦ *Sounds very much like me*

iii. The McGill Friendship Questionnaire (Mendelson & Aboud, 1999b)

The items on this form are designed to measure your feelings for your roommate [neighbour] as your relationship is just beginning.

Imagine that the blank space in each item contains your roommate's name. Please write your roommate's [neighbour's] first name in the blank space, just for the first item. With him or her in mind, decide how much you agree or disagree with the statement. On the scale directly to the right of each item **circle the number** that indicates how much you agree that the statement describes your feelings.

Please answer each item and circle only one response for each item. If you don't feel that you have had enough time to get to know your roommate [neighbour] and cannot answer an item, circle "Neutral" for that item.

There are no right or wrong answers, because adults' feelings for friends differ from person to person. Just try to honestly describe your feelings for your roommate [neighbour] based upon what you know about your roommate [neighbour] so far.

Based upon what I know about my roommate [neighbour] so far...	Very	Some-		Neutral	Some-		Very		
	Much	what	what		what	Much	Agree		
	Disagree	Disagree			Agree	Agree			
	-4	-3	-2	-1	0	1	2	3	4
1. I am happy with my friendship with ____.	-4	-3	-2	-1	0	1	2	3	4
2. I care about ____.	-4	-3	-2	-1	0	1	2	3	4
3. I like ____ a lot.	-4	-3	-2	-1	0	1	2	3	4
4. I feel my friendship with ____ is a great one.	-4	-3	-2	-1	0	1	2	3	4
5. I am satisfied with my friendship with ____.	-4	-3	-2	-1	0	1	2	3	4
6. I feel my friendship with ____ is good.	-4	-3	-2	-1	0	1	2	3	4
7. I want to stay friends with ____ for a long time.	-4	-3	-2	-1	0	1	2	3	4
8. I prefer ____ to most people I know.	-4	-3	-2	-1	0	1	2	3	4
9. I feel close to ____.	-4	-3	-2	-1	0	1	2	3	4
10. I think my friendship with ____ is strong.	-4	-3	-2	-1	0	1	2	3	4
11. I am pleased with my friendship with ____.	-4	-3	-2	-1	0	1	2	3	4
12. I am glad that ____ is my friend.	-4	-3	-2	-1	0	1	2	3	4
13. I hope ____ and I will stay friends.	-4	-3	-2	-1	0	1	2	3	4
14. I would miss ____ if he/she left.	-4	-3	-2	-1	0	1	2	3	4
15. I am content with my friendship with ____.	-4	-3	-2	-1	0	1	2	3	4
16. I enjoy having ____ as a friend.	-4	-3	-2	-1	0	1	2	3	4

iv. McGill Partnership Scale (Mendelson & Aboud, 1999b)

The items on this form concern the kind of friend your roommate [neighbour] is to you.

Imagine that the blank space in each item contains your roommate 's [neighbour's] name. With him or her in mind, decide how often the item applies. On the scale directly to the right of each item **circle the number** that indicates how often your roommate [neighbour] is or does what the item says. If you don't feel that you have had enough time to get to know your roommate [neighbour] and cannot answer an item, just indicate that you "don't know yet" by writing 'DK' in the blank space at the beginning of the item.

Please answer each item and circle only one response for each item.

There are no right or wrong answers because adult friendships are very different from one another.

Just describe your roommate as he or she really is to you.

Please notice that these questions are answered on a different scale than the questions you just finished.

Based upon what I know about my roommate so far...	Never	Rarely		Once in a While		Fairly Often		Always	
		0	1	2	3	4	5	6	7
1. ___ would help me if I need it.	0	1	2	3	4	5	6	7	8
2. ___ would make me feel comfortable in a new situation.	0	1	2	3	4	5	6	7	8
3. ___ is someone I can tell private things to.	0	1	2	3	4	5	6	7	8
4. ___ has good ideas about entertaining things to do.	0	1	2	3	4	5	6	7	8
5. ___ would want to stay my friend if we didn't see each other for a few months.	0	1	2	3	4	5	6	7	8
6. ___ makes me feel smart.	0	1	2	3	4	5	6	7	8
7. ___ makes me laugh.	0	1	2	3	4	5	6	7	8
8. ___ knows when I'm upset.	0	1	2	3	4	5	6	7	8
9. ___ helps me do things.	0	1	2	3	4	5	6	7	8
10. ___ points out things that I am good at.	0	1	2	3	4	5	6	7	8
11. ___ would be good to have around if I were frightened.	0	1	2	3	4	5	6	7	8
12. ___ would still want to be my friend even if we had a fight.	0	1	2	3	4	5	6	7	8
13. ___ lends me things that I need.	0	1	2	3	4	5	6	7	8
14. ___ would make me feel better if I were worried.	0	1	2	3	4	5	6	7	8
15. ___ is someone I can tell secrets to.	0	1	2	3	4	5	6	7	8

16.	___ would stay my friend even if other people criticized me.	0	1	2	3	4	5	6	7	8
17.	___ compliments me when I do something well.	0	1	2	3	4	5	6	7	8
18.	___ is exciting to talk to.	0	1	2	3	4	5	6	7	8
19.	___ makes me feel special.	0	1	2	3	4	5	6	7	8
20.	___ would stay my friend even if other people did not like me.	0	1	2	3	4	5	6	7	8
21.	___ knows when something bothers me.	0	1	2	3	4	5	6	7	8
22.	___ is exciting to be with.	0	1	2	3	4	5	6	7	8
23.	___ would make me feel calmer if I were nervous.	0	1	2	3	4	5	6	7	8
24.	___ helps me when I'm trying hard to finish something.	0	1	2	3	4	5	6	7	8
25.	___ makes me feel that I can do things well.	0	1	2	3	4	5	6	7	8
26.	___ would still want to stay my friend even if we argued.	0	1	2	3	4	5	6	7	8
27.	___ shows me how to do things better.	0	1	2	3	4	5	6	7	8
28.	___ is fun to sit and talk with.	0	1	2	3	4	5	6	7	8
29.	___ is easy to talk to about private things.	0	1	2	3	4	5	6	7	8
30.	___ makes me feel better when I'm upset.	0	1	2	3	4	5	6	7	8

APPENDIX B

The following table is a synopsis of the different fictional stories presented in the two studies from chapter 4. Study 1 was a 2x2x2 design. The story variants are labeled according to type of parental treatment (gift vs. loan), sibling deception (honest vs. dishonest) and genetic relatedness of the offspring (3 genetic offspring vs. 2 genetic offspring and 1 stepchild). Study 2 was a 2x2 design. The story variants are labeled according to type of parental treatment (gift vs. loan) and sibling deception (honest vs. dishonest). In study 2, genetic relationships of the siblings were not varied: in all four stories one child was the father's genetic offspring and the other two were his stepchildren.

Study 1

All three of the children were the father's genetic offspring.

	Honest	Dishonest (Sibling deception)
Gift (Differential Parental Treatment)	Father gives one of his sons a gift and this son tells his siblings about it and pays it back.	Father gives one of his sons a gift and this son keeps it and doesn't tell his siblings about it.
Loan (All children treated equally)	Father gives all children a loan and all agree to pay them back to the estate.	Father gives the same son a loan and this son deceptively and selfishly keeps the money from his siblings.

Two children were father's genetic offspring and one child was his stepchild.

	Honest	Dishonest (Sibling deception)
Gift (Differential Parental Treatment)	Father gives his biological son a gift and this son tells his full and half siblings about it and pays it back.	Father gives his biological son a gift and this son keeps it and doesn't tell his siblings about it.
Loan (All children treated equally)	Father gives all children a loan and all agree to pay them back to the estate.	Father gives the same son a loan and this son deceptively and selfishly keeps the money from his siblings.

Study 2

One child was father's genetic offspring and two were his stepchildren.

	Honest	Dishonest (Sibling deception)
Gift (Differential Parental Treatment)	Father gives his biological son a gift and this son tells his full and half siblings about it and pays it back.	Father gives his biological son a gift and this son keeps it and doesn't tell his siblings about it.
Loan (All children treated equally)	Father gives all children a loan and all agree to pay them back to the estate.	Father gives the same son a loan and this son deceptively and selfishly keeps the money from his siblings..

APPENDIX C

Encoding Kinship Questionnaire (Chapter Four, Study 1 and Study 2)

Now that you have read the photo-story I have a few questions about your interpretation of what happened in the story.

Given that none of the money owed to the estate has been paid. If you were to divide the \$150,000 between Victor, Samantha, and Neil any way that you liked how much would you give to each of them?

I would give Victor \$ _____

I would give Samantha \$ _____

I would give Neil \$ _____

The total amount given \$ _____

Please make sure that the total amount of money you distributed is exactly \$150,000.

Note: (A pie chart visually appeared illustrating the relative distributions to the three offspring. Subjects could not continue on to the next screen unless the total amount of money distributed was exactly \$150,000.)

In the following questions please indicate your response (check the appropriate button ○) on the scales provided. For example, in the first question 1 represents "I think Samantha is very likely to help Neil", and 7 represents "I think Samantha is very unlikely to help Neil".

How likely is it that Samantha will help her brother, Neil, in the future?

Very likely ① ② ③ ④ ⑤ ⑥ ⑦ Very Unlikely

How likely is it that Victor will help his brother, Neil, in the future?

Very likely ① ② ③ ④ ⑤ ⑥ ⑦ Very Unlikely

What sex are you? ○ Male
 ○ Female

How old are you? (please write your age in the space). _____

Please list the number of brothers you have, their ages and their genetic relationship to you (biological brother: both of your biological parents are also his biological parents, half brother: one of your biological parents is also his biological parent, step brother: you and your brother do not share either biological parent).

Brother 1: Age: _____ Relationship: _____
 Brother 2: Age: _____ Relationship: _____
 Brother 3: Age: _____ Relationship: _____

Brother 4: Age: _____ Relationship: _____

Please list the number of sisters you have, their ages and their genetic relationship to you.

Sister 1: Age: _____ Relationship: _____
 Sister 2: Age: _____ Relationship: _____
 Sister 3: Age: _____ Relationship: _____
 Sister 4: Age: _____ Relationship: _____

Please indicate your response by checking the appropriate button (○).

Who do you think needed the estate money the most?

- Victor and Sarah
- Neil and Virginia
- Samantha and Steve
- All of the couples needed the money equally

How would you describe Neil and Victor's brother-brother relationship before Raymond passed away?

Very Close ① ② ③ ④ ⑤ ⑥ ⑦ Very Distant

How would you describe Victor and Samantha's brother-brother relationship before Raymond passed away?

Very Close ① ② ③ ④ ⑤ ⑥ ⑦ Very Distant

How would you describe Neil and Samantha's brother-sister relationship before Raymond passed away?

Very Close ① ② ③ ④ ⑤ ⑥ ⑦ Very Distant

What would you predict Neil and Victor's brother-brother relationship after the meeting at the lawyer's office?

Very Close ① ② ③ ④ ⑤ ⑥ ⑦ Very Distant

What would you predict Victor and Samantha's brother-brother relationship after the meeting at the lawyer's office?

Very Close ① ② ③ ④ ⑤ ⑥ ⑦ Very Distant

What would you predict Neil and Samantha's brother-brother relationship after the meeting at the lawyer's office?

Very Close ① ② ③ ④ ⑤ ⑥ ⑦ Very Distant

How much do you like Raymond?

Like ① ② ③ ④ ⑤ ⑥ ⑦ Dislike

How would you describe Raymond and Victor's father-son relationship?

Very Close ① ② ③ ④ ⑤ ⑥ ⑦ Very Distant

How would you describe Raymond and Samantha's father-son relationship?

Very Close ① ② ③ ④ ⑤ ⑥ ⑦ Very Distant

How would you describe Raymond and Neil's father-son relationship?

Very Close ① ② ③ ④ ⑤ ⑥ ⑦ Very Distant

For the following questions please indicate your response on each of the scales (Angry, Sad, Ashamed, Confused, and Jealous).

**How did Samantha react to the outcome of the meeting at the lawyer's office?
Samantha appeared to be:**

Very Angry ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Angry

Very Sad ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Sad

Very Ashamed ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Ashamed

Very Confused ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Confused

Very Jealous ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Jealous

**How did Neil react to the outcome of the meeting at the lawyer's office?
Neil appeared to be:**

Very Angry ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Angry

Very Sad ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Sad

Very Ashamed ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Ashamed

Very Confused ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Confused

Very Jealous ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Jealous

**How did Victor react to the outcome of the meeting at the lawyer's office?
Victor appeared to be:**

Very Angry ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Angry

Very Sad ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Sad

Very Ashamed ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Ashamed

Very Confused ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Confused

Very Jealous ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Jealous

If you were Samantha how do you think you would have reacted to the outcome of the meeting at the lawyer's office? I would be:

Very Angry ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Angry

Very Sad ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Sad

Very Ashamed ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Ashamed

Very Confused ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Confused

Very Jealous ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Jealous

If you were Victor how do you think you would have reacted to the outcome of the meeting at the lawyer's office? I would be:

Very Angry ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Angry

Very Sad ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Sad

Very Ashamed ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Ashamed

Very Confused ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Confused

Very Jealous ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Jealous

If you were Neil how do you think you would have reacted to the outcome of the meeting at the lawyer's office? I would be:

Very Angry ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Angry

Very Sad ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Sad

Very Ashamed ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Ashamed

Very Confused ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Confused

Very Jealous ① ② ③ ④ ⑤ ⑥ ⑦ Not at all Jealous

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CURRICULUM VITAE

EDUCATION

- | | | |
|------|--|-----------------|
| 1996 | McMaster University | Ontario, Canada |
| | <i>M. Sc. (Equivalent) Psychology</i> | |
| 1995 | McMaster University | Ontario, Canada |
| | <i>B. Sc. Honours Psychology (Summa Cum Laude)</i> | |

PUBLISHED MANUSCRIPTS

Addison, T. L., & Schmidt (1999). Are women who are shy reluctant to take risks? Behavioral and psychophysiological correlates. *Journal of Research in Personality, 33*, 352-357.

Malamuth, N. M., & Addison, T. L. (in press). Integrating social psychological research on aggression within an evolutionary-based framework. To appear in G. Fletcher and M. Clark (Eds.), *Blackwell Handbook of Social Psychology, Vol. 2: Interpersonal processes*. Malden, MA: Blackwell.

Malamuth, N. M., Addison, T. L., & Koss, M. (in press). Are pornography consumers more likely to sexually aggress? Integrating a contradictory research literature using the confluence model. To appear in J. Heiman (Ed.), *Annual Review of Sex Research, Vo 11*.

Rock, A., Trainor, L., & Addison, T. (1999). Distinctive messages in infant-directed lullabies and play-songs. *Developmental Psychology, 35*, 527-534.

MANUSCRIPTS IN PREPARATION

Addison, T., L. Modulating expectations regarding (in)equities in social exchanges: Integrating the effects of personality and relationship type. Draft copy available upon request.

Addison, T. L. Encoding kinship in deceptive communication: The importance of genetic relatedness in judgments of equity and perceived entitlements in relationships.

Addison, T. L. The relationship of exchange orientation to quality of same-sex friendships in university residence.

Rosenthal, P., Dye, E., & Addison, T. L. The effects of legal and factual mediators on juror decision-making.

ACADEMIC PRESENTATIONS

Addison, T. L. (1999, June). Effects of relationship context on exchange orientation. Paper presented at the 11th annual meeting of the Human Behavior and Evolution Society conducted at University of Utah, Salt Lake City, Utah.

Addison, T. L. (1998, July). (Mis)-communicating across boundaries: The relevance of evolutionary theory. Paper presented at the 48th annual meeting of the International Communication Association, Interpersonal Communication Division, Jerusalem, Israel.

Addison, T. L. (1998, July). Evolutionary theory and social categorization: The importance of genetic relatedness on judgements of equity and perceived entitlement in social relationships. Paper presented at the 10th annual meeting of the Human Behavior and Evolution Society conducted at University of California, Davis, California.

Addison, T. L. (1998, January). Evolutionary theory and social categorization: The importance of genetic relatedness on judgements of equity and perceived entitlement in social relationships. Presented at the Clarke Psychiatric Institute, Toronto, Canada.

Addison, T. L. (1996, June). A study of Darwinian aesthetics: Health and preferences. Poster presentation at the 8th annual meeting of the Human Behavior and Evolution Society conducted at Northwestern University, Evanston, IL.

Addison, T. L. (1996, June). An assessment of preferences for content in environmental scenes: An electronic imaging approach. Poster presentation at the Psychology In-house conference at McMaster University, Ontario.

Addison, T. L. (1995, April). An assessment of preferences for content in environmental scenes: An electronic imaging approach. Poster presentation at the Eco-wise Ecological Symposium conducted at McMaster University, Ontario.

TEACHING INTERESTS

Introduction to Psychology
 Social Psychology
 Evolutionary Social Psychology
 Research Methods and Design
 Critical Thinking and Errors in Human Reasoning

TEACHING EXPERIENCE AND OTHER PROFESSIONAL ACTIVITIES

Graduate Teaching Assistant

1999-2000

Animal Behaviour Laboratory

1998-1999

Theories of Human Development
 Psychological Topics in Thinking

1997-1998

Introduction to Social Psychology
 Human Learning and Cognition

1996-1997

Introduction to Social Psychology
 Development During Infancy

1995-1996

Introduction to Social Psychology
 Human Learning and Cognition

Statistical Consulting

1999-2000 Data analyst for Dr. Paul Rosenthal and Dr. Eugenie Dye, UCLA
 Communication Studies Department.

Guest Lectures

July-August (1999) Series of lectures for Research Methods, UCLA, Los
 Angeles, CA.

April (1999). Guest lectures for Infant Development, McMaster University, ON.

January (1997). Series of guest lectures for Human Sexuality, University of
 Albuquerque, Albuquerque, New Mexico.

Research Assistant/Collaborator

1993-1995 Research Assistant to Dr. Margo Wilson, Department of Psychology, McMaster University.

1995 Eco-wise Ecological Project, McMaster University.

Ad-Hoc Reviewer

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ACADEMIC AWARDS

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OGSST (Ontario Graduate Scholarship in Science and Technology)

Yates Fund

McMaster University Department of Psychology Research Fellowship

McMaster University Department of Psychology Travel Grant

1998

McMaster University Department of Psychology Research Fellowship

McMaster University Department of Psychology Travel Grant

GSA Travel grant

1997

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GSA Travel Grant

1996

McMaster University Department of Psychology Research Fellowship

1995

McMaster University Department of Psychology Research Fellowship

PROFESSIONAL ORGANIZATION MEMBERSHIP

Human Behaviour and Evolution Society (HBES)

International Communication Association (ICA)