CHAPTER TWO

SOLIDARITY FRAMING EFFECTS ON BARGAINING

2.1 INTRODUCTION

The solidarity theory and the gain-seeking assumption on which the Nash solution is based lead to different predictions when solidarity norms come into play. According to this gain-seeking assumption, solidarity norms will not affect the actor’s behavior in the relational bargaining game. According to solidarity theory, there will be two specific relational effects. If conformity to solidarity norms constitute the individual’s frame, the choice alternatives are directly ordered in accordance with the solidarity norms. The relational aspects in the choice situation corresponding with the solidarity norms then have a relatively large impact on the individual’s behavior. This impact is considerably weaker if the individual’s frame is gain-seeking. Then, opportunities for gain guide the way in which the individual selects and ranks the choice alternatives. The solidarity aspects in the choice situation now affect only the salience (strength) of the gain frame, they do not change the selection and ordering imposed on the choice alternatives by the gain frame. A lower salience of the frame lowers the likelihood that the "best" option will be chosen.

In order to test the Nash prediction against predictions based on the solidarity theory, a relational bargaining game will be conducted in which different solidarity relationships can be induced. As was described in Chapter One, the relational bargaining game allows the individual to determine unilaterally the selling price in a transaction, and, thus, whether he or she will make a private profit at the expense of the buyer. In the scenario used in the game, the seller can set the price for a second-hand book, and the buyer does not know how much the seller paid for the book (it is 10 guilders in our

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15 An earlier version of this chapter had been published in Lewis & Wärneryd (1994), see Ligthart & Lindenberg, 1994.
scenario, 1 guilder is about 0.6 dollar). Furthermore, the seller is aware of the maximum amount (i.e., 50 guilders) the buyer is prepared to pay for this commodity. Given this combination of private and public information, the seller can determine unilaterally a selling price up to this maximum amount without reputational effects on the buyer. The hypotheses concerning the relational effects on the seller’s behavior in such a situation are formulated in the following section.

2.2 HYPOTHESES

The solidarity theory describes two basic effects of solidarity. First, solidarity is expected to restrain individual gain-seeking. Second, solidarity has a differential impact depending on whether solidarity is the individual frame. These solidarity effects will be discussed in further detail in the following two subsections.

2.2.1 Restrained individual gain-seeking

In the relational bargaining game, the seller has private information on the procurement cost and also knows the maximum price the buyer is willing to pay as this is public information. Consequently, the seller does not have to fear reputation effects. Thus, in keeping with the Nash-assumption, the gain-seeking, self-interested seller will insist on the highest selling price possible and in the game this equals the maximum amount the buyer is willing to pay, i.e. 50 guilders.

The predictions based on the solidarity theory differ for the three solidarity relationships, viz. the opportunistic, the weak-solidarity, and the strong-solidarity relationship. In the case of an opportunistic relationship, the seller is expected to behave according to the Nash assumption of self-interestedness. According to the solidarity theory, the choice alternatives (i.e., the different levels for the selling price) are ordered in terms of their gain prospect. If the salience for gain is high, the seller dealing with a buyer given an opportunistic relationship in the relational bargaining game can be assumed to have a gain frame untempered by solidarity considerations. The salience of the individual's gain frame can indeed be expected to be high, given the assumed absence of solidarity norms when the seller deal with a buyer who is a stranger and given that the seller, being a professional bookseller, has to
make a living by selling books. It is thus expected that the opportunistic seller, like Nash’s gain-seeking, self-interested seller will insist on the highest selling price possible, i.e., 50 guilders.

The predictions do differ for the other two solidarity relationships. In a strong-solidarity relationship, conformity to solidarity norms is the central goal of action. In the relational bargaining game to be presented, the seller’s gain implies the buyer’s loss. The relevant solidarity norms - to not harm the other, and to not increase the difference between the partners - will prevent the seller from individual private gain-seeking at the expense of the buyer. In a friendship relationship, not only the buyer but also the seller will perceive gain for the seller as a harm and as an increase in the difference between them. Thus, it is most likely that the seller will ask a profitless selling price in such a strong-solidarity relationship. The selling price will be approximately the seller’s purchase price: 10 guilders. Notice that because the seller is in a solidarity frame the possibility of exploiting the private information on the procurement cost does not even occur to the subject.

The solidarity norms have another impact on the weak-solidarity relationship. In this solidarity relationship, the seller has a gain frame although the salience of the frame is decreased by solidarity norms in the background. The relationship between acquaintances is assumed to be close to such a weak-solidarity relationship. Having a gain frame, the actor ranks the possible selling prices in terms of their gain prospect from highest (i.e., 50 guilders to lowest (i.e., 10 guilders which equals the cost price). However, the likelihood that the selling price offering the highest gain prospect (i.e., 50 guilders) will be chosen is decreased by the fact that solidarity concerns reduce the salience of the gain frame. According to the discrimination model, when the salience is low, the choice probability is close to non-discrimination. Thus, it is likely that the weak-solidarity oriented seller will insist on also a near\(^\text{16}\) fifty-fifty split of the maximum gain attainable in the relational bargaining game. If an acquaintanceship corresponds to a weak-solidarity relationship, it is thus expected that the seller will ask a selling price of just above 30 guilders, i.e., just above the midpoint between 10 and 50 guilders.

To summarize, the following hypotheses can be formulated concerning

\(^{16}\) The exact split will depend on the exact salience of the gain frame. Given the definition of weak-solidarity -a low salience gain frame-, it is expected that the split will be close to the fifty-fifty split, i.e., slightly in favor for the seller. The relation between salience and preferred split will be further elaborated in Chapter 4.
the level of the selling price asked by the seller. The **Nash gain-seeking hypothesis** as emphasized in bilateral bargaining gaming predicts:

I. Given private information in the relational bargaining game, the *gain-seeking, self-interested seller* will insist on the maximum selling price of 50 guilders irrespective of the relationship he or she has with the buyer.

Gain-seeking behavior as assumed by Nash is predicted by the solidarity theory only if the seller has an opportunistic orientation towards the other actor in the relationship. Otherwise, solidarity norms will restrict private gain-seeking at the expense of the buyer. With regard to the selling price, it is hypothesized in the solidarity theory in the **Relationship hypothesis** that (the operationalization is given in brackets):

II.a. In the case of an *Opportunistic relationship* (stranger), the subject will sell the book for a price which will maximize his profit, in other words, the maximum selling price of 50 guilders.

b. In the case of a *Weak-solidarity relationship* (acquaintanceship), the subject will sell the book for a price by which the partition of the negotiation set approximates a fifty-fifty split. In this game, the selling price will be just above 30 guilders.

c. A subject with a *Strong-solidarity relationship* (friendship), will not try to make any profit. In other words, he/she will sell the book at cost (10 guilders).

### 2.2.2 Solidarity framing effects

Another effect of solidarity that is described by the solidarity theory is framing. Solidarity has a differential effect on behavior depending on the individual frame. Following the discrimination model on which the solidarity theory is based, the impact of an aspect depends on the goal pursued by the individual. As described previously in Chapter One, the model formulated individual behavior in terms of a dominant goal (the frame). Given the bounded cognitive capabilities, the individual is assumed to handle only one dominant goal at a time. This dominant goal or frame determines the structuring of the choice alternatives for the individual. The other goals that fail to become the individual’s frame are still expected to have a background effect. These goals do not vanish for the individual, but continue to exert their influence through the salience (strength) of the frame. However, their impact on the individual behavior is decreased by their being in the background. An
aspect can have a differential impact depending on whether it is related to the dominant goal (i.e., the individual’s frame) or to a background goal.

The solidarity theory distinguishes two general behavioral goals, namely the pursuit of private gain and conformity to solidarity norms. These goals are "operationalized" by the individual in a specific situation. The solidarity theory supposes that the goal in a common case of business transactions is likely to be gain. In specific cases in which the individual has to decide about the level of the selling price, this goal can be approximated by raising the selling price. Here, the individual’s goal criterion for the goal of gain-seeking is to ask the highest possible price. An aspect in a situation is related to a goal when it is instrumental in the pursuit of the general behavioral goal.

The differential impact of an aspect is brought forward depending on whether or not the aspect is compatible with the pursuit of the dominant goal which constitutes the individual’s frame. While a compatible aspect affects the weighing of the choice alternatives directly, the aspect which is not instrumental to (incompatible with) the frame exerts its influence through the salience of the frame. If an individual has a solidarity frame, for example, the aspect of being a seller is likely to be incompatible with that individual’s goal of conforming to solidarity norms. By being in the background, this aspect lowers the salience of the solidarity frame, and thus increases the probability that the individual will deviate from the solidarity norm. In line with the discrimination model, the effect of this aspect is expected to be less if the frame is solidarity than if it is gain. This differential effect of an aspect depending on the individual’s frame is called the framing effect.

As was shown by the increased individual payoffs (Hoffman et al., 1992), the aspect of being a seller is instrumental to the pursuit of the goal of gain supposed by the authors. As in the discrimination model, however, this effect depends on which individual goal constitutes the individual’s frame. Aspects in the choice situation may have a differential impact depending on whether they are within the frame affecting the individual’s utility function or influencing the frame’s salience from the background. Aspects compatible with

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17 In the discrimination model, the goal criterion determines the choice alternatives; the individual subsequently weights with his or her utility function.

18 This is achieved by changing the utility function \( g \) which weighs the option \( i \) and the average of all the options \( 0 \). See footnote 9 in Chapter One.
the dominant goal constituting the frame are expected to have a larger impact on individual behavior than the same incompatible aspects through its salience.

In order to test solidarity framing, the relational bargaining game is presented to subjects assigned different roles: subjects who act as professional booksellers (i.e., as book shop owners) and subjects who act as themselves (i.e., as students). These roles are assumed to be related to different relevances of gain for the subjects. It was already shown by the experiments of Hoffman et al. (1992) that subjects who acted as sellers valued gain highly. Gain is probably more relevant for a professional bookseller because his or her living depends on making a profit, whereas this is usually not the case for students. It is therefore reasonable to assume that gain has more relevance for subjects acting as the professional bookseller than for those taking the role of the student. The relevance of gain factor makes it possible to test two hypotheses. First, it can be hypothesized (Relevance hypothesis) that:

**III.** the subject acting as a professional seller will insist on a higher selling price than the subject acting as a student.

Second, the solidarity theory predicts that this relevance-of-gain effect will have a smaller impact, especially when the individual has a solidarity frame. The aspect concerning the relevance of gain is considered to be compatible with this frame. According to the discrimination model, the effect then operates directly on the individual’s frame through the utility function by which the choice alternatives are weighed (in this case, the different possible levels of the selling price). Its effect on the individual’s claiming is then expected to be larger than when the individual has a solidarity frame. For the latter individual, the relevance-of-gain aspect is assumed to be incompatible with the primary goal of conforming to solidarity norms. According to the discrimination model, the aspect will then operate through the salience of the individual’s (solidarity) frame. The consequence is a decreased effect on the individual determining the level of the selling price. The expectation is that the higher level of relevance of gain for the individual acting as a professional bookseller compared with the individual acting as a student will have a smaller impact on the selling price if the individual has a solidarity frame than if the frame is gain-oriented. In short, it is hypothesized in the **Framing hypothesis** that:

**IV.** The selling prices of subjects as professional sellers (high relevance of gain) and the subjects as students (low relevance of gain)
will differ less if both kinds of actors have a solidarity frame than if they have a gain frame.

Third, there is also a general non-linear effect to be expected due to framing. Framed effects (on the selling prices asked) in the experiments to come are expected to be more similar within one frame than when they originate in different frames. The reason for this expectation is that the dominant goal generating the frame will be more salient than the goal affecting the salience of the frame. This discontinuity effects created by framing can be tested if at least one of the three solidarity relationships is based on a different frame. In terms of a hypothesis (Non-linearity hypothesis), this effect can be stated as follows:

V. selling prices asked by sellers in solidarity relationships based on the same frame will be more similar than those asked in solidarity relationships based on different frames.

The five hypotheses will be tested experimentally. The design and method are described in the following section.

2.3 Experimental design and method

Subjects A total of 155 subjects, female and male students from the universities of Groningen and Maastricht, participated in this study. The subjects were invited in groups of 6 subjects. Each subject was randomly assigned to one of the experimental conditions. Each subject filled out the questionnaire individually and in private. The subjects received a small compensation (5 guilders) for their participation.

Design The design contained one within-subject factor and two between subjects factors. The within-subject factor was the personal relationship between the seller (i.e., the subject) and the buyer. This factor had three levels: the buyer was a stranger, an acquaintance, or a good friend of the seller. These personal relationships were meant to induce in the subject a certain type of 'Solidarity Relationship', i.e., an opportunistic, a weak-solidarity, and a strong-solidarity relationship, respectively. It was expected that when a subject was dealing with a stranger or with an acquaintance, he or she would have a
gain frame. In the case of an acquaintance, it was supposed that solidarity operating in the background would decrease the salience of gain-seeking (weak-solidarity), and restrain private gain-seeking. In the case of a subject dealing with a good friend, solidarity norms were expected to dominate (thus, a solidarity frame) to a large extent, i.e., a highly salient solidarity frame (strong-solidarity relationship).

In addition to this within-subject factor, a between-subjects factor 'Relevance of gain' had been incorporated in the relational bargaining game. The relevance of gain was varied by assigning specific roles to the subjects. One role was the professional bookseller (who has to live off his profits and views gain as highly relevant), while the other role was that of the student (who usually does not depend on making a profit by selling anything and thus presumably views gain as less relevant). About half of the subjects had to imagine they were students, the other half that they were professional booksellers. The factorial design was, thus, as follows (the operationalizations are given in brackets):

<table>
<thead>
<tr>
<th>Experimental Design:</th>
<th>Solidarity Relationship (within-subject):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance of gain</td>
<td>Opportunism</td>
</tr>
<tr>
<td>(between subjects)</td>
<td>(stranger)</td>
</tr>
<tr>
<td>low relevance of gain</td>
<td>Weak-solidarity</td>
</tr>
<tr>
<td>(student)</td>
<td>(acquaintance)</td>
</tr>
<tr>
<td>high relevance of gain</td>
<td>Strong-solidarity</td>
</tr>
<tr>
<td>(bookseller)</td>
<td>(good friend)</td>
</tr>
</tbody>
</table>

In addition to these factors, a between subjects factor was introduced for the within-subject factor Solidarity Relationship. The subjects had to state a selling price for each of the three relationships. Each subject was presented with one of the six possible sequences of relationships. This sequences factor was assumed to counterbalance possible sequence effects because the factor is completely crossed with the experimental factors of interest.

**Procedure** Subjects were recruited to participate in a study concerning books.

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19 Nevertheless, the sequence factor will be given some attention in the overall analyses at the end of the book.
Upon arrival, each subject received a booklet, which was self-contained and presented a scenario and questions. The scenario described a situation in which the subject was in a position to sell a particular book to someone who was prepared to pay a maximum of 50 guilders for it. In contrast to the scenario previously presented in Chapter One, the version in this chapter did not locate the transaction in a bookshop.

One of the scenarios (the strong-solidarity relationship, low relevance of gain) was as follows:

"The situation:

Imagine you are a student in this city. You advertised in the local university paper to sell some second-hand textbooks. A good friend called and told you he/she was looking for a particular textbook. You did not own that book, but you were willing to look for it. The good friend was willing to pay a maximum of 50 guilders for the book.


Imagine a good friend with whom you are experiencing this event.

What is the first name of the good friend: ......"

The last sentence in the scenario (the request for the first name) was not presented in the opportunism condition, because the stranger was supposed to be nameless. The underlining of the key variables is added in this scenario for emphasis. One third of the subjects had to deal with a good friend in this scenario, one third with an acquaintance, and one third with a stranger.

The scenario was followed by a questionnaire that contained questions referring to dependent variables and concerning checks on experimental factors. The most important dependent variable was the selling price that the subject asked from the buyer. At the end of the first scenario, the subjects were also asked about the acceptability of a price range (given the relationship in the scenario). These selling prices were (for all subjects and in order of appearance): 20, 50, 30, 0, 40, 25 and 10 guilders. These acceptability questions enabled a qualitative test of the different ordering of gain prospects given the solidarity and gain frame.

The important explanatory variable was the frame induced by the three relationships. The induction was checked by asking the relative importance of
the private earnings and the relationship for the subject. The variable called Relative Importance had a nine-point scaled bar (bipolar) with labels at the extremes and in the middle. The scale was labeled as follows: (0) the relationship is considerably more important than my private earnings - (4.5) both are equally important - (9) my private earnings are considerably more important than the relationship. It is important to note that this type of scale had a meaningful midpoint. The midpoint divides the scale into two different frames and is, therefore, meaningful. The scale is depicted below.

<table>
<thead>
<tr>
<th></th>
<th>solidarity frame</th>
<th>gain frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>4.5</td>
<td>&lt; salience &gt;</td>
<td>low</td>
</tr>
<tr>
<td>9</td>
<td>low</td>
<td>&lt; salience &gt;</td>
</tr>
</tbody>
</table>

The domain on the scale left of the midpoint indicates the region where subjects have primarily a gain frame. The domain right of the midpoint indicates a solidarity frame for the individuals. The more extreme the individual’s prevalence is for one principle, the more salient the individual’s frame. The three solidarity relationships distinguished by the solidarity theory can, thus, be located as follows. An ideal type of opportunistic relationship is a highly salient gain frame, i.e., a score in the region to the far right on the scale. The ideal type of a weak-solidarity relationship equals a low salient, but still indicates a gain frame, e.g., a score in the region left of but close to the midpoint of 4.5. An ideal type of strong-solidarity relationship is a highly salient solidarity-frame, i.e., a score in the region to the far left on the scale. The different personal relationships are used to generate the different solidarity relationships in the intended regions on the scale.

Other control variables checked the perceived value of profit and the relationship itself on a unipolar scale, given the relationship. These questions required an answer on a seven-point scaled bar (unipolar) with labels at the extremes (i.e., "totally unimportant" and "extremely important"). At the end of the booklet, the subjects were asked questions concerning how seriously they had answered the questions and how well they could imagine the different situations.

2.4 RESULTS

The results were analyzed mainly by using the Multivariate Analysis
Of Variance-module (MANOVA) in SpssPc 4.0. The significant univariate results were only considered if there was also a significant multivariate effect. The significance level is $p < 0.05$. Did the experimental induction work? In the following section, control variables will be examined in order to ascertain, for example, whether the personal relationships corresponded with the intended solidarity relationship of the subject.

2.4.1 Checks on the experimental induction

The subjects had little or no trouble in imagining the situations very well (mean 6.5; s.d.=1.5) and took the answering of the questions very seriously (mean 6.1; s.d. = 0.7). Both variables were measured on a seven-point scaled bar (unipolar) with the extremes being "totally disagree" and "totally agree". No subject was removed from the analysis because of low scores on both these variables.

The main control variables concerned whether the personal relationships (stranger, acquaintance, or good friend) generated the intended frame and solidarity relationship for the subject. The experimental induction was checked by looking at the variables: the Relative Importance of profit versus relationship (a nine-point scaled bar), which was measured separately and the value of the Relationship and the value of Profit (both seven-point scaled bars).

A direct test of the subject’s type of frame was conducted which involved looking at the relative importance of private earnings versus the relationship. The variable Relative Importance was measured directly and described the relative importance of private earnings with regard to relationship for the subject determining the selling price. The means are shown in Figure 2.1. Along the Y-axis the type of the frame is indicated: above 4.5, private earnings are more important than the relationship (gain frame), below 4.5, the relationship is more important than private earnings (solidarity frame).

The results of the MANOVA-analysis showed a significant multivariate effect on the relative importance of the type of relationship (Solidarity: $F(2,148) = 466.3, p < 0.001$). All three contrasts between the three types of relationships were significant (Stranger-Acquaintance contrast: $t_{(148)} = 17.9, p < 0.001$, and Acquaintance-Friend contrast: $t_{(148)} = 13.5, p < 0.001$).
Generally, the results depicted in Figure 2.1 showed that the average subject perceived the personal relationships as different. However, the subject perceived the stranger as well as the acquaintance with more solidarity than was intended by the relationship used in the scenario. The subject dealing with a stranger appeared to have a weak-solidarity relationship rather than an opportunistic one. The mean value (6.19, s.d.=2.0) lay in the region in which profit was the dominant goal (i.e., above the midpoint of 4.5), but this dominance was not as extreme as might be expected in an opportunistic relationship. An opportunistic relationship is considered to be a highly salient gain frame according to the solidarity theory (see Chapter One, Figure 1.2). Furthermore, the subjects related to an acquaintance had a different solidarity relationship than was intended. On average, these subjects actually had a moderate form of strong-solidarity relationship (the mean value was 2.71, s.d.=2.1), i.e., a low salient solidarity-frame, instead of the intended weak-solidarity relationship, i.e., a low salient gain frame. The subject related to a good friend showed, as intended, a highly salient solidarity frame, i.e., a strong-solidarity relationship (the mean value was 0.75, s.d.=1.1).
The personal relationships in which the buyer acted as a stranger or as an acquaintance did not generate the intended solidarity relationship as defined by the solidarity theory. However, the test of the solidarity theory can be performed when these personal relationships are labeled according to the solidarity relationship as it actually was perceived by the average subject. Thus, the subjects who dealt with a stranger had a weak-solidarity relationship and the subjects who dealt with an acquaintance had a low salient solidarity-frame (a moderately strong-solidarity relationship). Although, the solidarity theory does not explicitly mentioned such a solidarity relationship, the relationship generating a low salient solidarity frame can easily be incorporated in the taxonomy of solidarity relationships. A typically opportunistic relationship could not be reproduced because the average subject generally viewed the buyer with a great deal of solidarity. This opportunistic relationship had to be left out of the analysis. The relationships - in particular the weak-solidarity and the strong-solidarity relationship, but also the moderately strong-solidarity relationship - could still be used to test the hypotheses formulated in the introductory sections. The significant contrasts between the personal relationships on the relative importance scale indicated that the subjects perceived the personal relationships as different types of solidarity relationship.

In the introductory sections, it was assumed that individuals as professional sellers weighed gain more highly than individuals as students (the Relevance of gain factor). The results for the relative importance variable indicated that this assumption was justified. The Relative Importance results, showed that the subjects differed significantly on the Relative Importance (Relevance of Gain: $F_{(1,149)}= 8.0, p< 0.027$). The subjects as professional sellers (mean value of 3.5; s.d.=1.2; n=71) valued gain relatively higher than the relationship compared with the subjects as students (a mean value of 3.0; s.d.=1.4; n=80). This effect did not differ between the three solidarity relationship conditions (Solidarity Relationship by Relevance of Gain: $F_{(2,148)}= 1.1, p< 0.352$); in every solidarity relationship the subjects as sellers evaluated the relationship relative to gain as more important than the subjects as students. The confirmation makes possible a meaningful testing of the relevance of gain effect on the selling price. The question then is, as described by the framing hypothesis, to what extent the subjects as sellers take the higher relevance of gain into account when determining the selling price.

The results of the separate measurements of the value of the profit and the value of the private earnings confirmed further the differences between the
solidarity relationships. The means of these control variables, only measured for the relationship of the first scenario, are summarized in Table 2.1.

### Table 2.1. The means of the value of the relationship and the private earnings for the different solidarity relationships (between subjects).

<table>
<thead>
<tr>
<th>Personal Relationship</th>
<th>mean Value Relationship</th>
<th>mean Value Private Earnings</th>
<th>number of subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stranger</td>
<td>3.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5.0&lt;sup&gt;a&lt;/sup&gt;</td>
<td>55</td>
</tr>
<tr>
<td>Acquaintance</td>
<td>5.3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2.7&lt;sup&gt;b&lt;/sup&gt;</td>
<td>50</td>
</tr>
<tr>
<td>Good Friend</td>
<td>6.1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.3&lt;sup&gt;c&lt;/sup&gt;</td>
<td>49</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td>154</td>
</tr>
<tr>
<td>s.d.</td>
<td>4.8</td>
<td>3.4</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a,b,c</sup> The differences between the means with different indices within each column were significant.

Both value variables had a significant multivariate effect on the type of relationship (Type of Relationship, $F_{(4,294)} = 38.9$, $p < 0.001$). The simple effects between the three conditions showed that the value of the Relationship differed between all the personal relationships (Stranger-Acquaintance contrast: $t_{(294)} = -12.1$, $p < 0.001$, and Acquaintance-Friend contrast: $t_{(294)} = -8.7$, $p < 0.001$). In other words, subjects who were in contact with a Stranger valued the relationship less than subjects related to an acquaintance, and these subjects valued the relationship less than the subjects in the Good Friend condition.

The value of Private Earnings differed between the type of the Relationships (Stranger-Acquaintance contrast: $t_{(294)} = 9.3$, $p < 0.001$), and differed significantly between the Good Friend and Acquaintance conditions (Acquaintance-Friend contrast: $t_{(294)} = 5.5$, $p < 0.001$). The results confirmed that the subjects in the high and low relevance of gain conditions evaluated the private earnings differently. On average, the subjects as sellers evaluated gain as more important than subjects as students (3.90 (s.d.=1.9) and 2.95 (s.d.=2.0), Relevance of gain: $F_{(2,147)} = 9.0$, $p< 0.001$). Importantly, the relevance of gain did not differ between the solidarity relationships (Relevance of gain by Stranger-Acquaintance contrast; $t_{(294)} = -0.3$, $p < 0.790$; Relevance of gain by Acquaintance-Friend contrast; $t_{(294)} = 0.9$, $p < 0.366$), and had no effect on the
In the following section, the predictions formulated in the hypotheses will be examined. Although an opportunistic relationship could not be reproduced, the consequences for the hypotheses were minor. The subjects varied in their solidarity relationship with the buyer and had the two intended frames. Furthermore, the subjects answered the questionnaire seriously, and they could easily put themselves in the situation presented by the scenario. The hypotheses were tested by means of two dependent variables, i.e., the selling price which the seller (i.e., the subject) asked of the buyer and the acceptability of the proposed selling prices to the seller within his or her relationship with the buyer.

2.4.2 The selling price

The introductory sections specified four hypotheses concerning the selling price of the subjects. The hypotheses which refer to the restrained gain-seeking effect of solidarity will be discussed first. The two hypotheses which deal with the framing effect will subsequently be examined. The mean selling prices relevant to these hypotheses are graphically depicted in Figure 2.2, the results of the MANOVA are summarized in Table 2.2.

Restrained gain-seeking effect of solidarity The Relationship hypothesis predicted that specific levels of selling prices would be dependent on the individual’s solidarity relationship. The Nash gain-seeking hypothesis predicted that each seller would insist on the maximum selling price of 50 guilders irrespective of the relationship with the buyer. Two other hypotheses referred to solidarity framing. The relevance hypothesis predicted that subjects with a higher relevance of gain (such as professional sellers) would insist on a higher selling price than subjects with a lower relevance of gain (i.e., as students). The framing hypothesis contained the prediction that this difference in relevance of gain would have a differential impact on the individual’s claiming behavior dependent on the frame. A high level of relevance of gain was expected to raise the selling prices in particular for those subjects who had a gain frame. It was expected that this effect would be smaller for the subjects with a solidarity frame.
Figure 2.2. The effect of the Solidarity Relationship by the Relevance of gain on the selling prices demanded. The purchase price was 10 guilders.

Table 2.2. The results of the MANOVA; the dependent variable is the Selling price asked by the subjects, the factors are Solidarity Relationship (weak, moderately strong, strong) and Relevance of gain (low, high).

<table>
<thead>
<tr>
<th>Effect</th>
<th>F(df)</th>
<th>p&lt;</th>
<th>Contrast</th>
<th>t-value</th>
<th>p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1116.2</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1,150)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance of gain</td>
<td>7.0</td>
<td>.009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1,150)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solidarity Relationship</td>
<td>250.2</td>
<td>.001</td>
<td>Wk-Mod.str</td>
<td>16.3</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>(2,149)</td>
<td></td>
<td>Mod.str-Str</td>
<td>11.0</td>
<td>.001</td>
</tr>
<tr>
<td>Solidarity Rel. by Relevance</td>
<td>6.1</td>
<td>.003</td>
<td>Wk-Mod.str</td>
<td>2.9</td>
<td>.005</td>
</tr>
<tr>
<td></td>
<td>(2,149)</td>
<td></td>
<td>Mod.str-Str</td>
<td>1.4</td>
<td>.161</td>
</tr>
</tbody>
</table>

The results of the analysis-of-variance showed that the solidarity relationships had a main-effect on the Level of the Selling Price. Subjects asked a higher price of a stranger (the Weak-solidarity relationship) than of an
acquaintance (the moderately Strong-solidarity relationship). The lowest price was asked from the good friend (the Strong-solidarity relationship). All univariate differences were significant (Wk-Mod.str: \( t_{(151)} = 16.3, p < 0.001 \) and Mod.str-Str: \( t_{(151)} = 11.0, p < 0.001 \)). These results are incompatible with the Nash gain-seeking hypothesis, which predicted the maximum selling price for all relationships. The predictions of the relationship hypothesis concerning the absolute selling price were also borne out quite closely: fl. 11.52 in the strong-solidarity condition (predicted fl. 10.00) and fl 33.47 in the weak-solidarity condition (predicted fl. 30.00). The hypothesis did not incorporate a prediction for the subjects in the moderately strong-solidarity relationship. The selling price of the subjects in this condition averaged fl 18.21. This selling prices fell between the prices that the subjects asked in the other solidarity relationships. Furthermore, the level of profit implied by this selling price was in accordance with their low salient solidarity frame. They asked for less profit than an equal partitioning of the surplus would suggest. This furthermore confirmed restrained gain-seeking as an effect of solidarity.

Framing effects of solidarity Two hypotheses were formulated concerning the relevance of gain in the introduction. The relevance hypothesis predicted that subjects with a higher relevance of gain (professional sellers) would insist on a higher selling price than subjects with a lower relevance of gain (students). The framing hypothesis contained the prediction that this difference in relevance of gain would have a differential impact on the individual’s claiming behavior, dependent on the frame. A high level of relevance of gain was expected to raise the selling prices, in particular for those subjects with a gain frame. It was expected that this effect would be smaller for the subjects with a solidarity frame.

The MANOVA results showed a main effect of Relevance of gain on the Selling Price (\( F_{(1,150)} = 7.0, p< 0.009 \)). As predicted by the Relevance hypothesis, the subject with a high relevance of gain sold the book for a higher price than the low relevance subject did. The subject as bookseller asked a mean selling price of fl 22.95, whereas the latter subject (as student) on average asked fl 19.45. Although this difference was small, it was in line with the results of Hoffman et al. (1992). A bargaining context explicitly phrased in terms of a seller-buyer exchange enhanced individual gain-seeking. But how did the framing hypothesis perform in these results?

The interaction effect of Solidarity Relationship by Relevance of gain
solidarity frame than if they had a gain frame. As can be seen in Figure 2.2, the difference between the two conditions of relevance of gain decreased much more between the two frames represented by the weak-solidarity and the moderately-strong relationship ($t_{(150)} = 2.9, p<0.005$). Whereas the difference in relevance of gain almost disappeared within the domain of the solidarity frame, that is, between the moderately strong and the strong-solidarity relationship ($t_{(150)} = -1.4, p<0.161$ n.s.), this interaction effect clearly indicated the differential effect of the relevance of gain depending on the individual’s frame, as predicted by the Framing hypothesis.

The conclusion concerning framing was strengthened by the fact that the subjects as booksellers evaluated the higher relevance of gain equally between the solidarity relationships (see the section concerning the checks on the experimental induction). Whereas these subjects did notice the higher relevance of gain, they did not consider determining the selling price. In other words, the observed interaction effect of the Relevance of Gain and the Solidarity Relationship on the level of the selling price cannot be attributed to a different weighing of gain by the subjects in the different solidarity relationships.

Another effect of framing was described by the non-linearity hypothesis. This hypothesis predicted that differences in selling prices between relationships based on the same frame would be smaller than between relationships based on different frames. The hypothesis was tested using a polynomial analysis of the selling prices asked, given the three solidarity relationships. It was tested whether a non-linear trend - more specifically a quadratic trend - contributed significantly to the prediction of the selling prices. In the analysis, it was taken into account that the solidarity relationships initially differed with respect to their mean positions on the relative importance variable (see Figure 2.1). The results of the MANOVA procedure are summarized in Table 2.3.

The significant positive linear trend in Table 2.3 ($t_{(150)} = 21.0, p<0.010$) showed that the selling prices increased the larger the impact of gain was in the solidarity relationship, i.e., the weak-solidarity, moderately strong-solidarity and strong-solidarity relationship, respectively. The significant positive quadratic trend in Table 2.3 ($t_{(150)} = 2.6, p<0.010$) indicated that this increase in selling price decreased along these solidarity relationships. In other words, the first
increase in selling price between the weak solidarity and the moderately strong-solidarity relationship was larger than the last increase between the moderately strong-solidarity and the strong solidarity relationship. As predicted by the non-linearity hypothesis, the selling prices were more similar within the frame than between frames. The result confirmed the discontinuity effect created by framing as implied by the solidarity theory.

<table>
<thead>
<tr>
<th>Effect</th>
<th>F(df)</th>
<th>p&lt;</th>
<th>Contrast</th>
<th>t-value</th>
<th>p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1,151)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solidarity Relationship</td>
<td>227.5</td>
<td>.001</td>
<td>linear trend</td>
<td>21.0</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>(2,150)</td>
<td></td>
<td>quadratic trend</td>
<td>2.6</td>
<td>.010</td>
</tr>
</tbody>
</table>

### 2.4.3 The acceptability of proposed selling prices

In the above section, the results were discussed in terms of the level of the selling price asked by the subjects themselves. The results showed there was indeed a solidarity effect. However, there is another method for checking on whether the two frames (gain and solidarity) indeed produced qualitatively different orderings of the choice alternatives (that is, several different selling prices). A question about the acceptability of proposed selling prices was asked in the context of the first scenario. The solidarity relationship factor acted here as a between-subjects factor. In the case of the solidarity frame with a moderately Strong and a Strong-solidarity relationship, the acceptability curve for the different proposed selling prices should have differed qualitatively from the acceptability curve for the gain frame (that is, the Weak-solidarity relationship, in which gain was supposedly the primary goal). The means of acceptability of the proposed Selling Price are presented graphically in Figure 2.3. Note the meaningfulness of the midpoint (4.5) of the scale for this variable: above the 4.5 line the proposed selling price was acceptable, below the line the price was unacceptable.

Figure 2.3 indeed shows a similar pattern for the Moderately strong and Strong-solidarity conditions and a strong contrast to the curve for the Weak-solidarity condition. The means for the acceptability of the proposed selling prices are significantly different between the two frames, except where
the curves cross\textsuperscript{20}. These results corroborate the framing effect for the within-subjects Solidarity factor, depicted in Figure 2.2.

Furthermore, it is clear from Figure 2.3 that the selling prices the subjects find most acceptable are in accordance with the prediction of the selling prices that the subjects themselves asked in the strong and weak-solidarity relationship: given a strong-solidarity relationship, the subjects found a proposed selling price of 10 guilders most suitable, given a weak-solidarity relationship, the subjects found 30 guilders most acceptable.

Figure 2.3. The effect of the Solidarity Relationship by the Level of the proposed Selling Price on the Acceptability of asking given a selling price.

2.5 DISCUSSION

This study focused on two basic tenets of the solidarity theory, that is, solidarity mitigates individual gain-seeking and differently between a weak-

\textsuperscript{20}The differences were tested with a significance level lower than 5 \%. The contrast between the Weak and Moderately strong-solidarity relationship was only not significant for the proposed selling price of 20 guilders t(df=152): -2.0, p< .053).
solidarity relationship and a strong-solidarity relationship. The first tenet was contrasted with the gain-seeking assumption according to the Nash postulate.

The Nash postulate predicts that in each relationship condition subjects will maximize their private gains. Subjects are expected to almost completely claim the given surplus for themselves by asking a selling price equal to the maximum amount the buyer is willing to pay. In contrast, the results showed that the subjects substantially lowered their selling prices compared to what they could have asked given the maximum offer of the buyer. An explanation of this effect by means of a reputational effect on prices does not seem likely. Although the higher frequency of contact for friends in contrast to acquaintances and strangers could, in principle, increase the shadow of the future for close relationships, the seller’s private information concerning the procurement cost excludes this possibility.

This study also showed the differential impact of gain aspects depending on the individual frame. In general, the results confirmed that individuals for whom gain is of high relevance (i.e., the subjects acting as professional booksellers) insisted on higher selling prices than individuals for whom gain is of low relevance. The results confirmed that this effect is mediated by the individual’s frame. Aspects incompatible with a frame, such as the aspect of relevance of gain for the solidarity frame studied, have a much smaller effect if compatible with the individual’s frame. The increased relevance of gain to the subjects as sellers resulted in an increased selling price and claim on the gain attainable, in particular by the subjects with a gain frame. Increases in the selling price by the subjects with a highly salient solidarity frame (i.e., strong-solidarity relationship) were almost nonexistent. The solidarity frame of the subject really pushed the relevance-of-gain aspect out of the individual’s focus. The confirmation of the non-linearity hypothesis showed that the frame narrowed the individual’s focus. The differences between selling prices within a frame were relatively smaller than differences between the prices in different frames.

As predicted by the solidarity theory, the results showed a substantial relational effect on the level of the subject’s selling price, as well as on the acceptability of the proposed selling prices. In the Weak-solidarity relationship condition, it was predicted that subjects would ask for a selling price of slightly more than 30 guilders implying a near fifty-fifty split of the gain. It was reasoned that these subjects structured the situation primarily according to gain criteria that were mitigated by solidarity considerations. The results confirmed
this line of reasoning. The subjects valued gain the most but still considered the relationship important, they asked 33.47 guilders and found 30 guilders to be the most acceptable price. In the strong-solidarity condition, a selling price equal to the cost price, 10 guilders, were predicted. The subjects would be primarily focussed on conforming to solidarity norms and thus would avoid making profit off a friend. This was, likewise, confirmed. The subjects found the relationship the most important aspect and were relatively unconcerned about gain, on average they asked a selling price of 11.52 guilders and the most acceptable price was, indeed, found to be 10 guilders. The prediction that in a purely opportunistic relationship subjects would ask the maximum price could not be tested. Even when dealing with a stranger, the subjects felt some relational concern for the other person. Thus, at least in this experiment, the purely opportunistic relationship could not be reproduced. This casts some more doubt on the Nash assumption of pure gain-seeking behavior in bargaining. However, in this study, there was no explicit manipulation of certainty and uncertainty. Consequently, a strict comparison with results from ultimatum and dictator games is not possible. In the following chapter, we will therefore concentrate explicitly on uncertainty.