Judgment and Decision Making, Vol. 5, No. 1, February 2010, pp. 11–20

# Attribute framing affects the perceived fairness of health care allocation principles

Eyal Gamliel*
Behavioral Sciences Department, Ruppin Academic Center

Eyal Peer
School of Education, Hebrew University of Jerusalem

**Abstract**

Health care resource allocation is a central moral issue in health policy, and opinions about it have been studied extensively. Allocation situations have typically been described and presented in a positive manner (i.e., who should receive medical aid). On the other hand, the negative valence allocation situation (i.e., who should not receive medical aid) has been relatively neglected. This paper demonstrates how positive versus negative framing of the exact same health care resource allocation situation can affect the perceived fairness of allocation principles. Participants usually perceived non-egalitarian principles (i.e., need, equity and tenure) to be fairer in positively framed situations (i.e., to deliver health care resources to certain patients) than negatively framed situation (i.e., not to deliver health care resources to other patients). However, framing did not affect the perceived fairness of the equality principle (i.e., a random draw). The paper offers a theoretical explanation for the effect of framing on the perceived fairness of health care resource allocation and discusses implications for both researchers and policy makers.

Keywords: attribute framing, health care resource allocation, perceived fairness.

## 1 Introduction

The issue of allocating health care resources to recipients is a central medical and ethical concern (Cuadras-Morató, Pinto-Prades, & Abellán-Perpiñán, 2001; Moore, 1996). Patients in need of medical aid frequently rely on the generosity of their community for survival. However, a community usually has a finite amount of health care resources, and the question of how these lifesaving but scarce health care resources should be distributed has been studied extensively (e.g., Ubel, Baron, Nash, & Asch, 2000; Ubel & Lowenstein, 1996).

As can be expected, the just allocation of social resources occupies many scholars, and different theories advocate different allocation principles. (For a taxonomy of distributive justice theories, see Sabbagh, 2001.) In the normative tradition of Miller's Theory of Justice (Miller, 1976) and the multiprinciple approach (Deutsch, 1985; Törnblom, 1992), three principles have usually been identified as central to the concept of distributive justice: *equity*, *equality* and *need* (Deutsch, 1975; Miller, 1999; Sabbagh, 2001).

These principles involve different rules. To realize the equity principle, one can allocate resources on the basis of ability, effort or merit (Alwin, 1992; Lewin-Epstein, Kaplan, & Levanon, 2003; Sabbagh, 2001). For example, if the decision is to allocate aid to all except claimants who are responsible for their illness, the decision can be viewed as based on a merit principle, because claimants who are not responsible for their illness are considered as more deserving than claimants who are responsible for their illness. To ensure equal allocation, one can use the simple equality rule ("to each the same") or offer equality of opportunities (Sabbagh, 2001). The principle of need is usually achieved by allocating according to individuals' medical condition, socio-economical status or other relevant needs (Sabbagh, 2001). The principle of tenure in terms of a waiting list is often used in health care resource allocations. In the UK, for example, the length of time a patient spends on a waiting list is used as the main criterion for donor liver allocations. The use of this tenure principle is also quite common in the USA (Ratcliffe, 2000). Judgments about allocation of health care resources, as well as actual allocations, are usually complex and dependent on many variables, such as the resource availability, the claimants' need for help, and their deservingness (Skitka & Tetlock, 1992).

*This research was supported by a grant from The Israel Foundations Trustees (2004-2006). A previous version of this paper was presented at the American Psychological Association Annual Convention, New Orleans, August 2006. Address: Eyal Gamliel, Head of Behavioral Sciences Department, Ruppin Academic Center, Emek Hefer 40250. Email: eyalg@ruppin.ac.il.

Public opinion on the appropriate allocation of scarce health care resources (e.g., organ transplantations, new vaccinations or treatments) may affect actual outcomes. People's readiness to donate organs, for example, may be affected by their views concerning the fairness of the system (Neuberger & Ubel, 2000; Peters, Kittur, McGaw, First, & Nelson, 1996; Ratcliffe, 2000). Accordingly, many surveys and studies have studied public opinion regarding the appropriate allocation of resources (e.g., Green, Fong, Mauger, & Ubel, 2001; Neuberger, Adams, McMaster, Maidment, & Speed, 1998; Neuberger & Ubel, 2000; Ratcliffe, 2000; Skitka & Tetlock, 1992, 1993; Ubel, Baron, & Asch, 2001; Ubel et al., 2000).

## 1.1 Framing

Studies that examined public opinion on health-care resource allocation typically described allocation situations in a positive manner (i.e., who should receive medical aid) but usually neglected the negative-valence allocation situation (i.e., who should not receive medical aid). However, framing identical situations in positive versus negative valences can affect people's opinions, judgments and attitudes toward a given object, event or outcome. (For a detailed review, see Levin, Schneider & Gaeth, 1998.) Tversky and Kahneman (1981) demonstrated the effect of framing in *risky choice* situations in which people exhibit systematic preference reversal in different framing of problems, contingencies, or outcomes. In their Asian disease problem, Tversky and Kahneman (1981) demonstrated that people showed reversed preferences between two options when these were presented in either a positive ("lives saved") or negative ("lives lost") frame. Kahneman and Tversky (1979) explained this preference reversal using Prospect Theory: Positive framing emphasizes benefits while negative framing emphasizes losses; whenever contemplating benefits, decision makers tend to minimize risks (exhibiting "risk-aversion") whereas when contemplating losses, decision makers tend to eliminate the losses, even when costs are high (demonstrating "risk-seeking") (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981).

A different type of framing, termed by Levin et al. (1998) *goal framing*, involves persuading people to engage in health-promoting behavior or to refrain from health-damaging behavior (Apanovitch, McCarthy, & Salovey, 2003; Banks, Salovey, Greener, Rothman, Moyer, Beauvais et al., 1995; Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999; Jasper, Goel, Einarson, Gallo, & Koren, 2001; Levin & Chapman, 1993; Meyerowitz & Chaiken, 1987; Rothman & Salovey 1997; Rothman, Salovey, Antone, Keough, & Martin, 1993; Schweitzer, 1995). These studies generally found that people were more likely to execute an action when presented with the negative consequences of not doing it rather than with the positive consequences of doing it. For example, Meyerowitz and Chaiken (1987) showed that a negative message containing the risks of not engaging in breast self-examination was more persuasive than the same information presented in positive terms of the gains associated with it. Similarly, Banks et al. (1995) found that women viewing negatively framed messages regarding mammography screening were more likely to undergo a mammogram relative to women viewing a positively framed message.

A third type of framing, termed by Levin et al. (1998) *attribute framing*, involves influencing people's judgments of an object or event by describing it in a positive or a negative manner, while holding its objective value constant. The typical finding in these cases was that an object or an event was evaluated more favorably when presented in a positive frame relative to presenting the very same object or event in a negative frame (Levin et al., 1998). For example, consumers' evaluations were more favorable toward a beef product labeled "75% lean" than that labeled "25% fat" (Levin & Gaeth, 1988). The theoretical explanation offered for *attribute framing* was that the positive labeling of the object or event evoked more favorable associations in participants' memories, which caused them to judge it more positively as opposed to the negative labeling, which elicited more negative and unfavorable associations (Levin et al., 1998).

Ganzach and Schul (1995) applied framing in a context that is more related to this paper. They demonstrated that an increase in both positive and negative features of potential roommates caused people to prefer them more when presented with a positive frame (to accept), and to reject them more when presented with the complementary negative frame (to reject). The findings were explained by confirmation bias that caused frame-compatible features to be more salient. A similar framing effect was found by Shafir (1993) in several contexts other than the one used by Ganzach and Schul (1995). These studies, together with the above theoretical explanation provided by Levin et al. (1998) for attribute framing, predicted that framing would affect the perceived fairness of resource allocation situations, and specifically, the perceived fairness of health care allocation principles.

## 1.2 The effect of framing on the perceived fairness of health care allocation principles

In light of the above, we asked whether the perceived fairness of a health care allocation principle would be affected by framing the allocation situation in a manner that resembles attribute framing. Would people perceive the different allocation principles (i.e., allocation

https://doi.org/10.1017/S1930297500001996 Published online by Cambridge University Press

by merit, need, tenure or equality) as more fair when presented with the health care allocation situation in a positive frame (i.e., patients *receive* the health care resource) relative to a negative frame (i.e., patients *not receive* the health care resource)? The theoretical explanation offered for attribute framing (Levin et al., 1998) can easily be applied to the context of the perceived fairness of health care resource allocation situations in which limited resources need to be distributed: positive labeling of an allocation situation (i.e., to whom should resources be given) will evoke favorable associations and cause participants to judge the principles used for the allocation as more fair; in contrast, negative labeling (i.e., who should not be given the resources) will evoke more unfavorable associations, leading participants to judge the situation, and the allocation principles used, as less fair. Because both descriptions specify the same end result (i.e., some patients will receive the medical aid and some will not), a difference in the perceived fairness of the allocation situation will indicate a framing effect, caused only by the difference in presentation.

Thus, we hypothesized that presenting participants with the task of judging the perceived fairness of allocation principles, positive framing of the allocation situation (i.e., to whom should resources be given) will evoke favorable associations and cause participants to judge the principles used for the allocation as more fair; in contrast, negative labeling (i.e., who should not be given the resources) will evoke more unfavorable associations, leading participants to judge the situation, and the allocation principles used as less fair.

# 2 Experiment 1

## 2.1 Method

### 2.1.1 Participants

The sample comprised 210 undergraduate students in the Behavioral Sciences Department of a higher education institution, 21 males and 184 females (five did not state their gender) who participated in the research in order to fulfill a course requirement. Participants' mean age was 26.4 with a standard deviation of 7.9.

### 2.1.2 Material

Participants were presented with a questionnaire regarding health care allocation situations. Each participant was presented with one of three hypothetical scenarios of different health care resource allocation: heart transplants, lung transplants or AIDS vaccinations. The heart transplants scenario read: "In a certain hospital department there are 50 patients suffering from heart disease. All 50 patients' lives are at risk unless they undergo a heart transplant. All other available treatments have been tried and failed. The hospital is expected to receive only 25 hearts for potential transplant patients." In the positive frame, participants were presented with four allocation principles for determining the 25 patients who would receive the resource. In the negative frame, participants were presented with four mirror principles for determining the 25 patients who would not receive the resource. The four allocation principles were merit (patients who are least/most responsible for their condition would receive/not receive the resource), need (patients who most/least need a heart transplant would receive/not receive the resource), tenure (patients who had been waiting the longest/shortest time would receive/not receive the resource) or equality (patients who won/lost a random draw would receive/not receive the resource). Participants were asked to judge the fairness of each principle on a 7-point scale (ranging from very unfair to very fair). The four decision options were presented in the above order for all participants. The two other scenarios (lung transplants and AIDS vaccination) were presented in a similar manner with the appropriate modifications.

### 2.1.3 Design and procedure

The experimental design was a 3-scenario (heart transplants, lung transplants and AIDS vaccination) X 2-frame (positive versus negative framing) between-participant design. The participants were randomly assigned to one of these six conditions. The research was presented as a study of attitudes toward health allocation situations. Participants were told that there were no correct or incorrect answers and that the information would be used for research purposes only.

## 2.2 Results and discussion

Table 1 presents the mean and standard deviation of each experimental condition. The framing effect was measured as the standardized difference (Cohen's $d$; Cohen, 1988) between positive and negative framing conditions. As detailed in Table 1, framing effects were found for the non-egalitarian allocation principles of merit, need and tenure. These effects were consistent in sign, of medium to large size, and usually statistically significant. The effects indicated, as hypothesized, that the perceived fairness of these principles was higher in the positive frame relative to the negative frame. The framing effects were larger for different allocation principles regarding different resources, with $d$ values ranging between 0.36 and 0.79, and an average of 0.58. In contrast, the perceived fairness ratings for the equality principle resulted in small framing effect sizes, inconsistent in sign, and statistically

https://doi.org/10.1017/S1930297500001996 Published online by Cambridge University Press

Table 1: Means of the perceived fairness of the four principles of allocation by scenario and framing (using a 7-point scale; standard deviations appear in parentheses).

| Scenario | Framing | Merit | Need | Tenure | Equality |
|---|---|---|---|---|---|
| Heart transplants | Positive (n=30) | 3.63 (1.5) | 6.23 (1.2) | 5.03 (1.4) | 4.03 (1.6) |
| | Negative (n=30) | 2.97 (1.8) | 5.50 (1.6) | 4.00 (1.5) | 3.87 (1.9) |
| | *Difference ($d^1$)* | *0.39* | *0.53** | *0.72** | *0.10* |
| Lung transplants | Positive (n=44) | 4.02 (1.5) | 5.86 (1.1) | 5.48 (1.2) | 4.70 (1.7) |
| | Negative (n=46) | 2.74 (1.8) | 4.87 (1.6) | 4.33 (1.7) | 4.48 (1.6) |
| | *Difference ($d^1$)* | *0.77** | *0.71** | *0.79** | *0.13* |
| AIDS vaccination | Positive (n=30) | 4.30 (2.1) | 5.17 (1.7) | 3.50 (1.7) | 4.43 (2.0) |
| | Negative (n=30) | 3.23 (1.8) | 4.37 (2.0) | 2.93 (1.5) | 4.87 (1.7) |
| | *Difference ($d^1$)* | *0.55** | *0.44** | *0.36* | *–0.23* |

[1] Cohen's $d$ was measured as the difference between positive frame mean minus negative frame mean in pooled-within standard deviation units.

* $p < .05$

non-significant ($d$ = 0.10, 0.13 and -0.25, for the heart and lung transplants and for the AIDS vaccination, respectively).

A multivariate analysis (MANOVA) of the perceived fairness, using framing and scenario as between-participant factors and the different principles as dependent variables, revealed a significant effect for framing, $F(2,212) = 19.24$, $p < .05$, and scenario, $F(4,424) = 5.86$, $p < .05$, but not for the framing by scenario interaction, $F(4,424) = 0.7$, $p > .05$. Thus, the data from all scenarios were collapsed. Again, consistently statistically significant medium sized effects were found for merit, need and tenure ($d$ = 0.57, 0.53 and 0.55, respectively) and none for equality ($d$ = 0.01).

In order to examine the interaction between framing and allocation principles, a repeated measure analysis was performed, predicting the perceived fairness from framing as a between-participants variable, and the four allocation principles as a within-participants variable. The results revealed a significant interaction (Wilk's Lambda measure of 0.95, $p < .05$), indicating differential framing effects for the four allocation principles.

As hypothesized, presenting an identical health care resource allocation in positive versus negative framing affected the perceived fairness of the allocation principles. However, in the scenario described above framing affected the perceived fairness of only the non-egalitarian allocation principles (i.e., merit, need and tenure); it did not affect the perceived fairness of the equality allocation principle.

Experiment 1 had several limitations. First, the experiment did not measure the mediating process of positive/negative associations. Second, the methodology used only one item to examine the perceived fairness of each allocation principle. Although such methodology is common in research of framing effects in judgment and decision making, it is not commonly used to examine people's attitudes and perceived fairness. Attitude and perceived fairness measures typically include several items and the responses are usually averaged to form an index. Third, presenting participants with several allocation principles may elicit relative judgments of their fairness.

Experiment 2 was designed to overcome these shortcomings in replicating the effect of attribute framing on the perceived fairness of health care allocation principles (egalitarian and non-egalitarian). This was done by (a) including a measure of the theoretical mediating variable: the differential positive versus negative associations elicited by the respective positive versus negative framing presentation; (b) using a multiple item methodology to examine participants' responses to the health care allocation principles; and (c) presenting each participant with only one allocation principle.

# 3 Experiment 2

## 3.1 Method

### 3.1.1 Participants

The sample comprised 230 undergraduate students in the Behavioral Sciences Department of a higher education in-

https://doi.org/10.1017/S1930297500001996 Published online by Cambridge University Press

Table 2: Means of the perceived fairness of the allocation situation for scenario and framing conditions (using a 7-point scale; standard deviations appear in parentheses; in each condition there were 37–40 participants).

| Scenario | Framing | Merit | Tenure | Equality |
|---|---|---|---|---|
| Heart transplants | Positive | 4.27 (1.6) | 4.58 (1.6) | 4.27 (1.7) |
| | Negative | 3.66 (1.3) | 3.91 (1.5) | 4.50 (1.8) |
| | *Difference ($d^1$)* | *0.42** | *0.43** | *-0.19* |
| AIDS vaccination | Positive | 4.07 (1.7) | 4.31 (1.3) | 4.14 (1.9) |
| | Negative | 4.07 (1.8) | 3.72 (1.6) | 4.32 (1.7) |
| | *Difference ($d^1$)* | *0.00* | *0.41** | *-0.14* |

[1] Cohen's $d$ was measured as the difference between positive frame mean minus negative frame mean in pooled-within standard deviation units.

* $p < .05$

stitution, 24 males and 206 females, who participated in the research to fulfill a course requirement. Participants' mean age was 23.5 with a standard deviation of 3.0.

#### 3.1.2 Material and Procedure

The experiment was conducted in a small laboratory, in which one or two participants were carefully monitored by an experimenter. The questions were presented by a computer. Each participant was presented with two health care allocation situations described in Experiment 1 (presented in counterbalanced order): heart transplants and AIDS vaccinations. (The lung transplants scenario was omitted in order to simplify the task.) Each participant was presented with either a positive or negative framing of the two scenarios, as presented in Experiment 1. Participants were then asked to judge the allocation decision that had been used — merit, tenure, or equality allocation principle — in both scenarios. In each scenario, participants were asked to rank their agreement with 10 items on a 1 (totally disagree) to 7 (totally agree) scale (4 defined as neutral). Each item was presented on a different screen, and above it appeared a reminder about the positively or negatively framed health care allocation in question. The 10 items related to various aspects of the scenario: cognitive ("I think the decision is fair"; "I think the decision is just"; "I believe it is fair to use this principle to decide in this situation"), affective ("I feel good about this decision"; "I am satisfied with this decision"; "If a family member were a patient, I would be satisfied if this principle was used"; "I am angry about this decision" [reverse coded]), or behavioral ("I would donate a small amount of money to an organization aimed at promoting such decisions"; "I would convince others that this decision is right"; "I would vote for this decision if a poll on the issue was taken"). The order of the 10 items in each scenario as well as the order of the two scenarios was randomized among participants. Following the 10-item questionnaire, the following question was presented on a new screen: "In general, do you consider this situation to be a positive or negative situation?" Responses were given using a 7-point scale ranging from 1–very negative, through 4–neutral, to 7–very positive. Other instructions resembled those presented in Experiment 1.

#### 3.1.3 Design

The experimental design was a 3-allocation principle (merit, tenure, or equality) X 2-frame (positive versus negative framing) between-participant design. The participants were randomly assigned to one of these six conditions.

### 3.2 Results and discussion

First, the differences between the 10 attitudinal items were examined. For each of the two scenarios MANOVA analysis was performed using 3 allocation principles (merit, tenure, or equality) X 2 framing conditions (positive versus negative) X 10 items (the allocation and framing factors were between-participants and the item factor was within-participants). In both MANOVA analyses, the item X framing interaction and the item X framing X allocation interaction were not statistically significant (Wilk's Lambda measures of 0.94–0.95, $p > .05$ in all four cases). These results indicated similar framing effects for the various items in each scenario and allocation principle. In addition, high internal reliability of the 10 items

https://doi.org/10.1017/S1930297500001996 Published online by Cambridge University Press

was found in each scenario – Cronbach's alpha measures were 0.95. Thus, all 10 items in each scenario were averaged into a single measure of the perceived fairness of the health care allocation situation.

Table 2 presents the mean and standard deviation of the perceived fairness for each experimental condition. As can be seen, framing effects were found in three of the four non-egalitarian principles. These effects were statistically significant with a medium sized effect, indicating more favorable perceived fairness in the positive framing condition relative to the negative framing condition. Only for the merit principle in the AIDS scenario was no framing effect found. In contrast, for the equality principle, small, negative, and not statistically significant effects were found, illustrating that the perceived fairness was only slightly more favorable in the negative framing condition relative to the positive framing condition.

Two 2-way ANOVAs were performed for predicting the participants' perceived fairness of the allocation situation for each scenario by framing and allocation principle as predictors. The results revealed that the interaction of framing X allocation principle was small and not statistically significant for both heart transplants and AIDS vaccination scenarios ($F(2, 224) = 1.90$ and 1.09, respectively, both $p$'s $> .05$); the framing main effect was not statistically significant ($F(1, 224) = 2.80$ and 0.37, respectively, both $p$'s $> .05$); and neither was the allocation principle ($F(2, 224) = 1.35$ and 0.32, both $p$'s $> .05$).

In order to test for the possible mediating role of the situation's valence, a similar analysis was performed on the last question that probed whether the situation was perceived as positive or negative. As can be seen in Table 3, the findings were generally consistent with the ones described in Table 2 — in the three experimental conditions where the framing effect was significant, the situation was perceived as more positive in the positive framing condition by 0.4–0.7 standard deviations relative to the negative framing condition. Similar in direction, but smaller in magnitude was the result for the merit principle condition of the AIDS scenario (0.19 standard deviations). The effect was opposite in sign for the equality principle conditions, where negative, small, and non-statistically significant differences were found (-.23 and -0.08 standard deviations).

Two 2-way ANOVA were performed for predicting the participants' perception of the situation for each scenario by framing and allocation principle as predictors. The results were different for the two scenarios: for the heart transplants scenario, the interaction of framing X allocation principle was statistically significant ($F(2, 224) = 3.50$, $p < .05$); the framing main effect was also statistically significant ($F(1, 224) = 4.90$, $p < .05$); in contrast, the allocation principle was not statistically significant ($F(2, 224) = 1.39$, $p > .05$). None of these three effects was statistically significant for the AIDS vaccination scenario: the interaction of framing X allocation principle ($F(2, 224) = 0.68$, $p > .05$), the framing main effect ($F(1, 224) = 1.29$, $p > .05$), and the allocation principle ($F(2, 224) = 0.57$, $p > .05$).

The results of Experiment 2 generally replicated the results of Experiment 1: framing affected the perceived fairness of non-egalitarian principles — merit and tenure — in three out of the four experimental conditions, while no similar effect was found in the two experimental conditions for the equality principle. The size of the framing effect on the perceived fairness of the non-egalitarian principles closely corresponded to the size of the framing effect on the perception of the positivity/negativity of the scenario: medium positive effect sizes for the two scenarios of tenure and for the heart transplant scenario of the merit principle; small to nil effects for the AIDS vaccination scenario of the merit principle; small negative effects for the two scenarios of the equality principle. That is, in all three experimental conditions where positive framing evoked more favorable perceived fairness than negative framing, the situation was perceived as more positive; in the other three experimental conditions where the effect of framing was negligible, small differences in how the situation was perceived were found. The lack of a framing effect on the merit principle in the AIDS scenario, as well as the small non-significant framing effect on the positivity/negativity of the situation, could have been related to the specific wording of this context. It is possible that participants did not ascribe higher responsibility for AIDS contamination for patients who engaged in unsafe sex behavior versus patients who contracted the disease through a faulty blood infusion. However, this is only a speculative explanation and obviously requires more research.

These findings, along with the similar positive/negative reactions to the two framing conditions relating to the equality principle, are consistent with the theoretical explanation offered originally by Levin et al. (1998): Framing evoked fewer favorable (or unfavorable) associations when the situation lacked a specific outcome, as was the case when the equality principle was used. Thus, it is possible that attribute framing affected the perceived fairness of the resource allocation when distributive justice aspects of the situation (i.e., the outcome) were emphasized relative to highlighting the procedural justice aspects (i.e., the method used). An alternative explanation for the differential effect of framing on the perceived fairness of

https://doi.org/10.1017/S1930297500001996 Published online by Cambridge University Press

Table 3: Perceptions of the situation as positive/negative by scenario and framing (using a 7-point scale; standard deviations appear in parentheses; in each condition there were 37–40 participants).

| Scenario | Framing | Merit | Tenure | Equality |
|---|---|---|---|---|
| Heart transplants | Positive | 4.22 (2.0) | 4.68 (1.6) | 3.92 (2.1) |
| | Negative | 3.47 (1.6) | 3.46 (1.6) | 4.25 (2.2) |
| | *Difference ($d^1$)* | *0.41** | *0.76** | *-0.23* |
| AIDS vaccination | Positive | 4.00 (2.1) | 4.29 (1.5) | 4.08 (2.2) |
| | Negative | 3.60 (2.1) | 3.68 (1.7) | 4.20 (2.1) |
| | *Difference ($d^1$)* | *0.19* | *0.38** | *-0.08* |

[1] Cohen's $d$ was measured as the difference between positive frame mean minus negative frame mean in pooled-within standard deviation units.

* $p < .05$

non-egalitarian and equality principles is suggested in the general discussion section.

The inclusion of the question asking about the positive/negative impression of the allocation situation presented does not, however, provide a straightforward proof of the theoretical explanation. Possibly, participants regarded this question as an additional item asking about the perceived fairness of the situation. Although we tried to separate it from the other questions by presenting it on a separate screen and using different scale labels, we still found high correlations between the answers to this question and the earlier ones.

# 4 General discussion

Our results demonstrated the effect of framing the same health care resource allocation situation in positive versus negative terms on the perceived fairness of non-egalitarian principles — need, equity and tenure. Allocation of vital health care resources (heart or lung transplants and AIDS vaccination) according to equity, tenure or need was usually perceived as more fair when the allocation was framed positively — who should receive the health care resource — than when the same allocation was framed negatively — who should not receive the resource. These results were obtained in all six conditions of Experiment 1 and in three out of four conditions of Experiment 2. Framing effect sizes ranged from medium to large, and they were statistically significant. There was no consistency in the relative size of the framing effects across the three non-egalitarian principles, neither between the different scenarios nor between Experiments 1 and 2. In contrast, in Experiments 1 and 2 framing did not affect the equality principle consistently. The effects were small, inconsistent in sign and not statistically significant.

Our results are consistent with previous findings of the attribute framing effect, in which objects or events are judged more favorably when presented in a positive versus negative framing (Levin et al., 1998). Although attribute framing was examined in many other domains (Levin et al., 1998), the effect of attribute framing on perceptions of fairness in allocation of health care resources has not been demonstrated to date.

The theoretical explanation proposed for attribute framing effects (Levin et al., 1998) has been that when an object or event is presented in a positive manner, it is known to evoke more favorable associations in participants' memories, as opposed to negatively framed objects. This psychological process has been posited as leading people to favor positively framed objects more than negatively framed ones. Applying the attribute framing explanation to this study suggests that the positive labeling of the allocation situation (i.e., to whom resources should be given) allegedly evoked more favorable associations and made participants judge the principles used for the allocation as more fair. This is opposed to the negative labeling (i.e., who should not be given the resources), which evoked more unfavorable associations, leading participants to judge the situation, and the allocation principles used as less fair.

This explanation is somewhat challenged by the absence of a framing effect for the equality principle (i.e., random draw). However, it is possible that, unlike all the other non-egalitarian principles that explicitly dictated a specific outcome, the random draw actually referred to

https://doi.org/10.1017/S1930297500001996 Published online by Cambridge University Press

the allocation process and did not describe the outcome of the allocation procedure. This might imply that the framing of the allocation situation was less salient and that the lack of a specific outcome hindered participants from envisioning the allocation result. Thus, fewer favorable (or unfavorable) associations caused by the framing were evoked, and the principles were judged in an arbitrary fashion.

An alternative explanation might be related to previous findings showing that people express different attitudes when they wish to obtain "good" or when they wish to avoid the receipt of "bad" (e.g., Sabbagh & Schmitt, 1998; Törnblom, 1988; Törnblom & Ahlin, 1998). These studies demonstrated that people preferred the equity principle over the equality principle in allocation of positive resources relative to negative resources (Brickman, Folger, Goode, & Schul, 1981; Elster, 1989; Goodwin, 1992; Kayser & Lamm, 1980; Törnblom & Jonsson, 1985). As the negative framing in this paper is related to allocating negative resources, it is possible that the relative preference of the equality principle in the negative framing condition was counteracted by the higher positive perception of the allocation situation in the positive framing condition. The result of this counteraction was small, and inconsistent in sign, differences between the perceived fairness of the equality principle in the positive relative to the negative framing conditions.

The methodology used in this study differed from the one used in previous studies of resource allocation. While other studies used different allocation scenarios of positive resources versus negative resources, this study used different frames (positive versus negative) for allocating the exact same health care resource allocation. Applying the framing paradigm to examine the perceived fairness of the allocation principles of health care resources enabled us to control all other factors by altering only the situation descriptions. This ensured that the objective situation itself was not changed, and that differences between the perceived fairness reported above can only be attributed to the different frames of identical allocation situations.

This paper usually found that framing affected the perceived fairness of non-egalitarian principles used in health care allocation. An interesting question would be whether framing would also affect choices between egalitarian and non-egalitarian principles in health care allocation. Previous research suggests that the effect of framing might be different in a choice versus judgment task (Ganzach, 1995; Schlottmann & Tring, 2005; Tversky, Sattath, & Slovic, 1988; Westenberg & Koele, 1992).

The effect of framing on the perceived fairness of health care resource allocations has both theoretical and practical importance for scholars in the social sciences examining this issue as well as for the public trying to form an opinion about the just allocation of scarce health care resources. Typical surveys have usually described allocation situations in terms of positively framed situations (e.g., to whom or how health care should be granted) but failed to explore the equally important negative framing of such situations. This study revealed that the issue of the "frame" — should an allocation situation be described as positive or negative — might hold important consequences for people's attitudes, judgments, and perceived fairness. Future research can utilize the framing methodology when exploring the public's opinion regarding the perceived manner in which allocation should be made in the context of health care resource allocation. Accordingly, policy makers should, among other factors, also bear in mind that the manner in which they present their allocation decisions can affect people's responses. Finally, the general public should also be aware that an allocation situation might appear to be more or less fair to them as a result of how it was presented.

Using undergraduate students as participants in this paper may have hampered the external validity of the studies. However, the theoretical explanation predicts similar effects for people of different age groups.

Although this research explored only health care related resources, the proposed framing paradigm could be applied to other resource allocation situations. For example, the public's attitudes toward the allocation of scarce government funding could be examined using either positive (i.e., who, or which programs, should receive the funding) or negative (i.e., who or what should not receive the funding) frames. Future research could also apply the framing effect to other social, organizational, government, or judicial resource allocations.

# References

Alwin, D. F. (1992). Equity theory. In G. H. Elder, E. Borgatta & M. Borgatta (Eds.), *Encyclopedia of sociology* (pp. 563–575). New York: Macmillan Publishing Co.

Apanovitch, A. M., McCarthy, D., & Salovey, P. (2003). Using message framing to motivate HIV testing among low-income, ethnic minority women. *Health Psychology, 22*, 60–67.

Banks, S. M., Salovey, P., Greener, S., Rothman, A. J., Moyer, A., Beauvais, J., et al. (1995). The effects of message framing on mammography utilization. *Health*

https://doi.org/10.1017/S1930297500001996 Published online by Cambridge University Press

*Psychology, 14*, 178–184.

Brickman, P., Folger, R., Goode, E., & Schul, Y. (1981). Microjustice and macrojustice. In M. J. Lerner, & S. C. Lerner (Eds.), *The justice motive in social behavior* (pp. 173–202). New York: Plenum.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cuadras-Morató, X., Pinto-Prades, J. L., & Abellán-Perpiñán, J. M. (2001). Equity considerations in health care: The relevance of claims. *Health Economics, 10*, 187–205.

Detweiler, J. B., Bedell, B. T., Salovey, P., Pronin, E., & Rothman, A. J. (1999). Message framing and sunscreen use: Gain-framed messages motivate beachgoers. *Health Psychology, 18*, 189–196.

Deutsch, M. (1975). Equity, equality, and need: What determines which value will be used as the basis of distributive justice. *Journal of Social Issues, 31*, 137–150.

Deutsch, M. (1985). *Distributive justice: A social-psychological perspective*. New Haven, CT: Yale University Press.

Elster, J. (1989). Social norms and economic theory. *The Journal of Economic Perspectives, 3*, 99–117.

Ganzach, Y. (1995). Attribute scatter and decision outcome: Judgment versus choice. *Organizational Behavior and Human Decision Processes, 62*, 113–122.

Ganzach, Y., & Schul, Y. (1995). The influence of quantity of information and goal framing on decision. *Acta Psychologica, 89*, 23–36.

Goodwin, B. (1992). *Justice by lottery*. Chicago: University of Chicago Press.

Green, M. J., Fong, S., Mauger, D. T., & Ubel, P. A. (2001). Rationing HIV medications: What do patients and the public think about allocation policies? *Journal of Acquired Immune Deficiency Syndromes, 26*, 56–62.

Jasper, J. D., Goel, R., Einarson, A., Gallo, M., & Koren, G. (2001). Effects of framing on teratogenic risk perception in pregnant women. *The Lancet, 358*, 1237–1238.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*, 263–291.

Kayser, E., & Lamm, H. (1980). Input integration and input weighting in decisions on allocations of gains and losses. *European Journal of Social Psychology, 10*, 1–15.

Levin, I. P., & Chapman, D. P. (1993). Risky decision making and allocation of resources for leukemia and AIDS programs. *Health Psychology, 12*, 110–117.

Levin, I. P., & Gaeth, G. J. (1988). How consumers are affected by the framing of attribute information before and after consuming the product. *Journal of Consumer Research, 15*, 374–378.

Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes, 76*, 149–188.

Lewin-Epstein, N., Kaplan, A., & Levanon, A. (2003). Distributive justice and attitudes toward the welfare state. *Social Justice Research, 16*, 1–27.

Meyerowitz, B. E., & Chaiken, S. (1987). The effect of message framing on breast self-examination attitudes, intentions, and behavior. *Journal of Personality & Social Psychology, 52*, 500–510.

Miller, D. (1976). *Social justice*. Oxford: Clarendon.

Miller, D. (1999). *Principles of social justice*. Cambridge, Massachusetts: Harvard University Press.

Moore, R. F. (1996). Caring for identified versus statistical lives: An evolutionary view of medical distributive justice. *Ethology and Sociobiology, 17*, 379–401.

Neuberger, J., Adams, D., MacMaster, P., Maidment, A., & Speed, M. (1998). Assessing priorities for allocation of donor liver grafts: Survey of public and clinicians. *British Medical Journal, 317*, 172–175.

Neuberger, J., & Ubel, P. A. (2000). Finding a place for public preferences in liver allocation decisions. *Transplantation, 70*, 1411–1413.

Peters, T. G., Kittur, D., McGaw, L., First, M., & Nelson, E. (1996). Organ donors and non-donors. *Archives of Internal Medicine, 156*, 2419–2424.

Ratcliffe, J. (2000). Public preferences for the allocation of donor liver grafts for transplantation. *Health Economics, 9*, 137–148.

Rothman, A. J., & Salovey, P. (1997). Shaping perceptions to motivate healthy behavior: The role of message framing. *Psychological Bulletin, 121*, 3–19.

Rothman, A. J., Salovey, P., Antone, C., Keough, K., & Martin, C. D. (1993). The influence of message framing on intentions to perform health behaviors. *Journal of Experimental Social Psychology, 29*, 408–433.

Sabbagh, C. (2001). A taxonomy of normative and empirically oriented theories of distributive justice. *Social Justice Research, 14*, 237–263.

Sabbagh, C., & Schmitt, M. (1998). Exploring the structure of positive and negative justice judgments. *Social Justice Research, 11*, 381–396.

Schlottmann, A., & Tring, J. (2005). How children reason about gains and losses: Framing effects in judgement and choice. *Swiss Journal of Psychology, 64*, 153–171.

Schweitzer, M. (1995). Multiple reference points, framing, and the status quo bias in health care financing decisions. *Organizational Behavior and Human Decision Processes, 63*, 69–72.

Shafir, E. (1993). Choosing versus rejecting: Why some options are both better and worse than others. *Memory and Cognition, 21*, 546–556.

Skitka, L. J., & Tetlock, P. E. (1992). Allocating scarce resources: A contingency model of distributive justice. *Journal of Experimental Social Psychology, 28*, 491–522.

Skitka, L. J., & Tetlock, P. E. (1993). Providing public assistance: Cognitive and motivational processes underlying liberal and conservative policy preferences. *Journal of Personality and Social Psychology, 65*, 1205–1205.

Törnblom, K. Y. (1988). Positive and negative allocations: A typology and a model for conflicting justice principles. *Advances in Group Processes, 5*, 141–168.

Törnblom, K. Y. (1992). The social psychology of distributive justice. In K. R. Scherer (Ed.), *Justice: Interdisciplinary perspectives* (pp. 177–236). Cambridge: Cambridge University Press.

Törnblom, K., & Ahlin, E. (1998). Mode of accomplishing positive and negative outcomes: Its effect on fairness evaluations. *Social Justice Research, 11*, 423–442.

Tornblom, K. Y., & Jonsson, D. R. (1985). Subrules of the equality and contribution principles: Their perceived fairness in distribution and retribution. *Social Psychology Quarterly, 48*, 249–261.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science, 211*, 453–458.

Tversky, A., Sattath, S., & Slovic, P. (1988). Contingent weighting in judgment and choice. *Psychological Review, 95*, 371–384.

Ubel, P. A., Baron, J., & Asch, D. A. (2001). Preference for equity as a framing effect. *Medical Decision Making, 21*, 180–189.

Ubel, P. A., Baron, J., Nash, B., & Asch, D. A. (2000). Are preferences for equity over efficiency in health care allocation "all or nothing"? *Medical Care, 38*, 366–373.

Ubel, P. A., & Loewenstein, G. (1996). Distributing scarce livers: The moral reasoning of the general public. *Social Science & Medicine, 42*, 1049–1055.

Westenberg, M. R., & Koele, P. (1992). Response modes, decision processes and decision outcomes. *Acta Psychologica, 80*, 169–184.