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Valuations of human lives: normative expectations and psychological mechanisms of (ir)rationality

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Abstract A central question for psychologists, economists, and philosophers is how human lives should be valued. Whereas egalitarian considerations give rise to models emphasizing that every life should be valued equally, empirical research has demonstrated that valuations of lives depend on a variety of factors that often do not conform to specific normative expectations. Such factors include emotional reactions to the victims and cognitive considerations leading to biased perceptions of lives at risk (e.g., attention, mental imagery, pseudo-inefficacy, and scope neglect). They can lead to a valuation function with decreasing marginal value and sometimes even decreasing absolute value as the number of victims increases. As a result, people spend more money to save an individual while at the same time being insensitive and apathetic to large losses of life, despite endorsing egalitarian norms. In this conceptual paper, we propose a descriptive model highlighting the role of different motivations and the conditions under which cognitions and emotions result in deviations from egalitarian normative valuations of human lives.

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Imagine that one person is at risk of dying and that you could save her life by a donation to a trusted humanitarian aid organization. Now imagine that 87 persons are already at risk of dying, and that you could help save an additional (i.e., the 88th) person by a similar donation. Would you give the same amount in both scenarios? Even though in both cases the recipient is just one person, donations typically are higher in the first scenario than in the second (Slovic 2007). If asked how much a single life is worth, most people find it difficult to generate an exact monetary value. In fact, many would reason that the value of a life cannot easily be quantified although from an egalitarian moral perspective no differences should exist between the worth of individual lives. These egalitarian principles are reflected in many modern societies emphasizing that "all human beings are born free and equal in dignity and rights" (Universal Declaration of Human Rights, Article 1). Intuitively it may be easy to agree with these maxims, however not all moral theories or actions necessarily conform to them (Sinnott-Armstrong 2011). Even if one endorses egalitarian norms, the valuation of an individual human life does not follow the consistent pattern one would expect if it was done in a rational, deliberative way (i.e., if it rests on rational thinking instrumental in achieving the desired goals; see Baron 2008). In this article we examine some of the psychological factors that can lead to decisions that deviate from rational principles in valuations of human lives.

1 Valuations as expressed preferences

Economic and psychological theories of choice rest on the assumption that preferences are expressed by the objective or subjective valuations of specific objects (e.g., Kahneman and Tversky 1979; Markowitz 1952; Quiggin 1982; von Neumann and Morgenstern 1944). However, more recent empirical work has pointed out that people's monetary valuation (i.e., willingness to pay) for something is often more similar to an attitude expression than a sign of economic preference (Kahneman and Ritov 1994; Kahneman et al. 1999). In line with this proposition, research on the valuation of public goods has found that people can be remarkably scope insensitive in their evaluations, possibly because these represent general attitudes rather than precise monetary values (e.g., Frederick and Fischhoff 1998; Kahneman and Frederick 2005). For example, participants paid roughly the same amount to save 2000, 20000, or 200000 birds from drowning in oil ponds (Desvouges et al. 2010) and were also willing to pay the same amount to save wolves in Maine, Wisconsin, or both states altogether (Frederick and Fischhoff 1998). Such insensitivity to scope represents a clear deviation from classical economic principles.

We argue that this deviation may be even stronger for decision contexts in which egalitarian moral principles are invoked, as is the case when human lives are at stake. In these situations, the willingness to help others often reflects unstable values that are quite insensitive to changes in magnitude (Dickert and Slovic 2011;

Slovic and Västfjäll 2010).[1] An important (albeit not exclusive) way in which individuals express their caring for others is through financial gifts to humanitarian causes (Singer 1972, 2009; Slovic 2007). When donors make decisions about the allocation of resources to people in need, they have to decide whom to help and how much to give. These decisions often include difficult trade-offs (Li et al. 2010; Unger 1996), which can be implicit with regard to the use of money (e.g., to donate versus to use the money for oneself; Rubaltelli and Agnoli 2011) as well as explicit in selecting among different donation recipients or charitable causes (Soyer and Hogarth 2011).

2 Moral perspectives

The trade-offs in such decisions likely depend on the adopted ethical theory. For example, agent-relative utilitarianism provides the possibility of assigning more weight to the welfare of a specific individual, such as valuing a relative or close friend higher than a stranger. In contrast, egalitarian moral theories (e.g., total and average utilitarianism) assume that all individuals' welfare should be valued equally (Sinnott-Armstrong 2011). The endorsed ethical theory, in turn, determines the type of goal one pursues in valuing human lives. For example, resources may be distributed with the goal of equal benefit to all people (following egalitarian utilitarianism) or with the goal of maximizing the welfare of close others (following agent-relative utilitarianism) where lives are differentially weighted in importance (Hammitt and Treich 2007; Li et al. 2010; Schelling 1968; Tinghög 2011).

Different moral theories provide different standards against which to judge whether valuations of human lives follow rational and normative concerns. While some researchers argue for abandoning normativism altogether as an evaluative standard for judgments, decisions, and thinking (e.g., Elqayam and Evans 2011; Evans and Elqayam 2011), the study of moral reasoning usually rests on the assumption that people endorse specific moral norms (e.g., not to kill). Although multiple moral norms exist, people often have clear moral convictions and goals against which their actual behaviour can be normatively assessed. In the following account, a descriptive theory based on empirical findings elucidating how actions can seem non-normative within egalitarian ethical systems (e.g., where every individual is—or should be—valued equally) will be discussed. Importantly, the reviewed empirical findings all rely on situations where donors are asked to help a varying number of strangers with which no personal relationship exist and, therefore, agent-relative utilitarianism does not necessarily apply.

3 Empirical findings

A central phenomenon in philanthropy that has sparked considerable interest in recent theoretical and empirical investigations is the seemingly irrational fact that people can exhibit a surprising amount of caring for individuals but remain largely unmoved by catastrophes that cost large numbers of people their lives (Slovic 2007). In a series of

[1] Such responses are similar to other forms of preference in that they are often constructed, multifaceted, and multi-determined (Lichtenstein and Slovic 2006; Payne et al. 1992; Slovic 1995).

experiments, Kogut and Ritov (2005a,b, but see also Kogut 2011); demonstrated that a single individual victim often garners more financial support than a group of victims (i.e., "singularity effect"). It appears as though the singularity effect is related to the mere presence versus absence of other victims because donations tend to decline when the single victim is presented as part of a group. Similarly, adding statistical victims to a single one decreased donations to the individual victim (Small et al. 2007). Although such a valuation pattern might conform to some egalitarian ethical theories in principle (e.g., average utilitarianism), it appears as non-normative according to others (e.g., total utilitarianism; Arrhenius et al. 2010). For example, average utilitarianism considers acts as morally correct if the average welfare is maximized (as is often the case when only one victim receives help), whereas total utilitarianism evaluates actions according to the maximum net gain in welfare.

Another, related example of valuations deviating from total utilitarianism norms is based on the fact that people sometimes give more weight to the proportion of lives they are saving than to the absolute number of lives saved (i.e., proportion dominance; Fetherstonhaugh et al. 1997; Friedrich et al. 1999). Although participants evaluated helping a higher number of victims as more normative, their actual decisions were sensitive to and partially influenced by the proportions saved (Bartels 2006). Basing one's preferences and valuations on proportions may be related to the fact that they are easier to evaluate than absolute numbers (Hsee and Zhang 2010; Slovic et al. 2002). Conversely, people find it difficult to judge how good saving a specific number of lives is without knowing how many are at risk. Sometimes knowing the number of lives one cannot save even leads to a decline in motivation to help those one can save, a reaction that Västfjäll and Slovic (2011) termed "pseudo-inefficacy". Being unable to help others should not change valuations of lives of those we can help. However, a donor may *feel* much less efficacy in helping when she is aware of the lives that cannot be saved.

A third example of violations of some egalitarian ethical standards is related to identified versus statistical victims. Generally, identified victims are valued more highly than statistical victims (Jenni and Loewenstein 1997; Schelling 1968; Small and Loewenstein 2003). Whereas statistical victims pass people by without much notice, identified victims raise their interest and capture attention. After all, statistical victims are often not more than a number whereas identified victims have a face, a name, and a story that makes them appear more real than the reality beneath the surface of the statistics (Slovic 2010). This "identifiable victim effect" may be even stronger when single individuals are identified compared to groups of people (Kogut and Ritov 2005a,b).

4 Valuations as a function of victim numbers

Contrary to the egalitarian maxim that every life should be valued equally, empirical data support the notion that donations are not linearly related to the number of lives at risk and instead follow a curvilinear relationship as the number of victims increases (see Fig. 1; Andreoni 2007; Fetherstonhaugh et al. 1997). Due to similarities with other phenomena in perception (Fechner 1860) and valuation

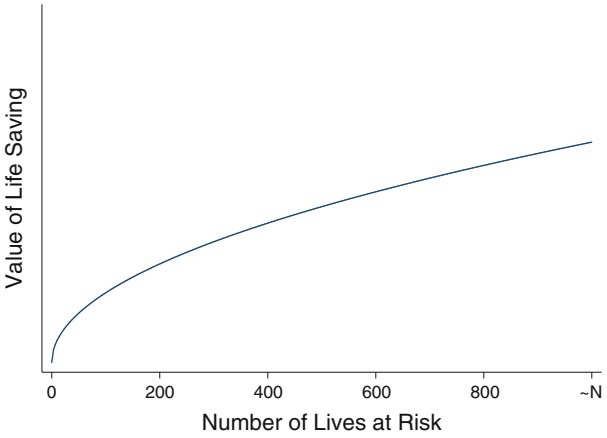

Fig. 1 Psychophysical numbing described by the power function $\psi = k\phi^{\beta}$, where k is a constant, ϕ represents the stimulus magnitude (e.g., the number of lives at risk) and β is a parameter with values between 0 and 1 which leads to a concave shape

(Bernoulli 1738/1954), Fetherstonhaugh et al. (1997) termed this "psychophysical numbing".

The shape of the psychophysical numbing function captures several properties of how the number of lives at risk is cognitively perceived. The decreasing marginal increase in valuations depicts diminished sensitivity to changes in victim number as the number increases. In a different context, a value function like this can explain why a gain of $10 is more valuable to a person who has $100 versus someone who has $1,000. However, when applied to the valuation of human lives, the psychophysical properties of this function imply that each individual life becomes less valuable as the number of people at risk increases. Put differently, people perceive that there is very little value in saving an additional person if there are already many lives saved. Conversely, if only one person is at risk people value saving the life highly. While psychophysical numbing is similar to other cognitive phenomena related to stimulus perception (e.g., sound, light, or money), a moral context such as lifesaving adds another dimension (such as emotional sensitivity) that may profoundly contribute to the marginal decrease in valuations.

Additionally, it should be noted that the valuation of human lives depicted in Fig. 1 might be a special case for the more general phenomena of scope insensitivity. A prominent explanation for scope insensitivity assumes that judgments about the value of a specific good (or endangered life) are made with a 'prototype' heuristic (Kahneman and Frederick 2005). Accordingly, judgments of value rely on the unconscious substitution of extensional information about the good (e.g., how many lives are endangered) with non-extensional information (e.g., imagining a single prototype of the lives endangered), which is then evaluated affectively. While this can explain the scope neglect in some studies (e.g., Desvouges et al. 2010; Frederick and Fischhoff 1998), the singularity effect also suggests that adding extensional information about the group of victims (e.g., its size) can have a negative impact

on valuations (Small et al. 2007). Additionally, for valuations of small numbers of victims (1 vs. 8; Kogut and Ritov 2005a) prototypes may not be used since it is possible to use exact mental representations in such small intervals (albeit less effectively as the number increase). It is possible that the prototype heuristic explanation works best for situations in which the objects of valuation are large groups, and when people are able to mentally imagine such a prototype (e.g., by unitizing the groups; Rottenstreich et al. in press) and evaluate it affectively (Dickert and Slovic 2009).

5 Valuations as a function of emotions

If all lives are equal we would assume that emotional reactions are positively and linearly related to the number of victims. However, there is reason to believe that people may not respond to large numbers emotionally in the same way as they would cognitively (e.g., Dunn and Ashton-James 2008; Kahneman 2003). While there are discernible differences in how numbers are cognitively represented, emotionally people tend to be less sensitive to changes in magnitude (Hsee and Rottenstreich 2004; Pham 2007; but see Gong and Baron 2011). For example, the difficulty of grasping the enormous suffering in countries stricken by poverty leads people to respond with emotional indifference and compassion fatigue.

In fact, the loss of a single, identified life may be felt more deeply than the loss of many statistical ones. Recently, Slovic (2007, 2010) suggested a descriptive model of people's emotional concern for others with the psychic-numbing function depicted in Fig. 2. The defining feature of this function is that emotional responses (such as sympathy and compassion) sometimes appear to decrease as the number of lives at risk increases. That is, people seem to care most when a single life is on the line and grow apathetic as victim numbers grow large enough that they are difficult to comprehend emotionally (Slovic 2007; Slovic and Västfjäll 2010; Västfjäll et al. 2008). In its most

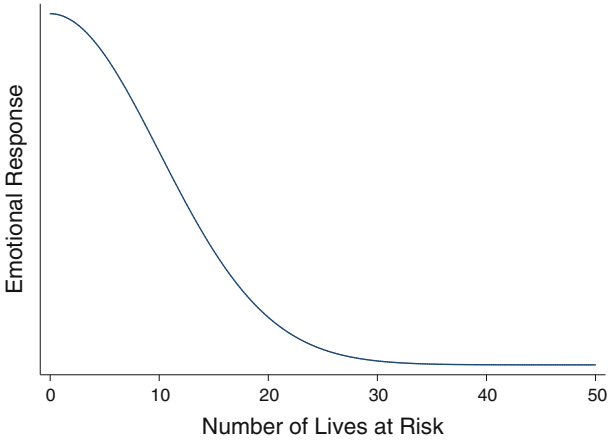

Fig. 2 Psychic numbing

dramatic depiction, the decline in compassion may sometimes begin as soon as there is more than one life at risk.

Given the importance of emotions in motivating helping behavior (Batson 1990), the negative relationship between emotional responses and number of lives at risk plays an important role in explaining why every life is not valued equally (even if one agrees with egalitarian moral principles). Effects like singularity and scope neglect, pseudo-inefficacy, and identifiability can all be understood as a failure to engage critical emotional processes underlying these valuations.

6 Processes underlying emotional responses

To understand when and how emotional responses (or lack thereof) contribute to valuations of human lives, it is important to take a detailed look at the specific, interrelated cognitive mechanisms underlying emotions in charitable giving. Slovic (2007) postulated that these feelings arise from attentional processes and the way victims are mentally represented. Subsequent research has also examined the (moderating) effects of information processing mode (Dickert et al. 2011; Small et al. 2007) and individual differences (e.g., Dickert et al. 2011; Kleber et al. 2012).

6.1 Mental imagery and attention

The concrete, vivid mental representation of events plays a central role in affective responses underlying many decisions (Slovic et al. 2002). When confronted with charity requests, people's emotional responses partially depend on the vividness with which the victims and their suffering are mentally represented. Accordingly, more concrete mental imagery usually leads to stronger empathic concern (Loewenstein and Small 2007). Single, individual victims also tend to facilitate more concrete and coherent mental representations. As the number of victims increases, the mental representation becomes more diffuse and abstract until it is difficult to attach emotional meaning to it. The monotonic decrease in emotional responses depicted in Fig. 2 is a result of less concrete mental images as victim numbers increase.

In order to mentally transform the suffering of others into a coherent and meaningful mental representation, it is often necessary to focus on the specific features of those in need. In situations where selective attention to these features is reduced or not possible, mental images do not generate emotions that motivate helping. For example, presenting similar individual victims as part of a group tends to reduce affective responses to any single one of them (Dickert and Slovic 2009).

6.2 Information processing

Just as attentional focus determines which aspects are given particular weight in the valuation of lives, the processing mode (affective vs. deliberative) influences which information is particularly salient (Evans 2008). In line with this reasoning, priming participants to process information affectively led to stronger emotions and higher

donations in Dickert et al. (2011) and Small et al. (2007). Conversely, a more deliberative processing mode decreased both affective responses as well as donations relative to a control condition. Furthermore, emotional reactions tend to be myopic in their influence on valuations such that immediate emotional concerns usually trump more distant ones (Pham 2007).

6.3 Individual differences

Several individual differences are related to the cognitive mechanisms underlying emotional responses and can inhibit as well as strengthen their effects. Of particular interest in explaining the generation of feelings underlying valuations are differences in the perception of victims. Most notably, people differ in their propensity to engage in mental imagery (Childers et al. 1985). When the lives at risk are presented as statistical victims (e.g., as a numerical figure), these differences might be especially important in predicting the generation of feelings. Recent research also highlights numerical skill (i.e., numeracy; Peters et al. 2006) as a factor in people's ability to construct concrete versus abstract mental images from numeric information in decision contexts (Dieckmann et al. 2009). Indeed, the effect of mental images on donations was mediated by affective responses only for lower numerate individuals, such that clearer mental images led to higher donations through stronger affective responses (Dickert et al. 2011).

A more general approach may include cognitive ability (e.g., intelligence; Stanovich and West 2000) as well as rational versus experiential thinking (Epstein et al. 1996) as possible moderators of emotional influences on judgments. Higher intelligence is negatively correlated with error frequency in most judgments (Kahneman and Frederick 2005), and a more rational thinking style is related to normative valuations (Bartels 2006). According to this argument, the relationship between number of victims and valuations (as well as emotions) should be more linear for people with greater cognitive skill and rational thinking. However this assumption still awaits further empirical validation.

7 Summary and conclusion

The reviewed research demonstrates how sensitive valuations of human lives can be to contextual factors that have no clear normative import. Empirical studies provide support for the notion that an individual life is valued less in a context where many lives are at risk. Singularity (and scope neglect), pseudo-inefficacy, and identifiability effects can be explained by their relation to emotional responses underlying helping behavior. The situations and conditions under which valuations deviate from specific normative moral considerations (e.g., egalitarian utilitarianism) are related to the mechanisms that influence emotional reactions. While we did not provide an exhaustive list, we focused on cognitive determinants that highlight how the generation of emotions can be hindered or facilitated, and how these emotions contribute to unstable (and sometimes non-normative) valuations of human lives.

However, it should also be noted that deviations from normative considerations do not necessarily constitute irrational valuations per se. Since there are multiple (and competing) ethical theories, a specific valuation can only be normatively and rationally assessed under the condition that a specific ethical theory is accepted as the standard. In our current review, we were especially interested in the family of egalitarian ethical systems (e.g., where every live is equally important) because many people in modern societies would probably agree with such a statement while at the same time displaying behaviors that violate this normative moral principle (e.g., Bartels 2006). Generally, it is possible to categorize valuations to be rational or irrational when it is assumed that all lives are equal, resulting in a linear relationship between the number of lives and their value. At the same time, valuations and preferences that change depending on irrelevant contextual factors can hardly be considered rational.

References

Andreoni, J. (2007). Giving gifts to groups: How altruism depends on the number of recipients. *Journal of Public Economics, 91*, 1731–1749. doi:10.1016/j.jpubeco.2007.06.002.

Arrhenius, G., Ryberg, J., & Tännsjö, T. (2010). The repugnant conclusion. In E. N. Zalta (Ed.), *Stanford encyclopedia of philosophy*. Stanford: Stanford University. (http://plato.stanford.edu/archives/fall2010/entries/repugnant-conclusion/).

Baron, J. (2008). *Thinking and deciding* (4th ed.). Cambridge: Cambridge University Press.

Bartels, D. M. (2006). Proportion dominance: The generality and variability of favoring relative savings over absolute savings. *Organizational Behavior and Human Decision Processes, 100*, 76–95. doi:10.1016/j.obhdp.2005.10.004.

Batson, C. D. (1990). How social an animal? The human capacity for caring. *American Psychologist, 45*, 336–346. doi:10.1037//0003-066X.45.3.336.

Bernoulli, D. (1954). Exposition of a new theory on the measurement of risk. *Econometrica, 22*, 23–36. (Original work published 1738)

Childers, T. L., Houston, M. J., & Heckler, S. E. (1985). Measurement of individual-differences in visual versus verbal information-processing. *Journal of Consumer Research, 12*, 125–134. doi:10.1086/208501.

Desvouges, W. H., Johnson, F., Dunford, R., Hudson, S., Wilson, K., & Boyle, K. (2010). *Measuring nonuse damages using contingent valuation: An experimental evaluation of accuracy* (2nd ed.). Durham, NC: RTI Press: Research Triangle Institute.

Dickert, S., Kleber, J., Peters, E., & Slovic, P. (2011). Numeric ability as a precursor to pro-social behavior: The impact of numeracy and presentation format on the cognitive mechanisms underlying donations. *Judgment and Decision Making, 6*, 638–650.

Dickert, S., Sagara, N., & Slovic, P. (2011). Affective motivations to help others: A two-stage model of donation decisions. *Journal of Behavioral Decision Making, 24*, 361–376. doi:10.1002/bdm.697.

Dickert, S., & Slovic, P. (2009). Attentional mechanisms in the generation of sympathy. *Judgment and Decision Making, 4*, 297–306.

Dickert, S., & Slovic, P. (2011). Unstable values in lifesaving decisions. *Frontiers of Psychology, 2*, 294. doi:10.3389/fpsyg.2011.00294.

Dieckmann, N. F., Slovic, P., & Peters, E. M. (2009). The use of narrative evidence and explicit likelihood by decisionmakers varying in numeracy. *Risk Analysis, 29*, 1473–1488. doi:10.1111/j.1539-6924.2009.01279.x.

Dunn, E. W., & Ashton-James, C. (2008). On emotional innumeracy: Predicted and actual affective responses to grand-scale tragedies. *Journal of Experimental Social Psychology, 44*, 692–698. doi:10.1016/j.jesp.2007.04.011.

Elqayam, S., & Evans, J. St. B. T. (2011). Subtracting 'ought' from 'is': Descriptivism versus normativism in the study of human thinking. *Behavioral and Brain Sciences, 34*, 233–248. doi:10.1017/S0140525X1100001X.

Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996). Individual differences in intuitive-experiential and analytical-rational thinking styles. *Journal of Personality and Social Psychology, 71*, 390–405. doi:10.1037/0022-3514.71.2.390.

Evans, J. St. B. T. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology, 59*, 255–278. doi:10.1146/annurev.psych.59.103006.093629.

Evans, J. St. B. T., & Elqayam, S. (2011). Towards a descriptivist psychology of reasoning and decision making. *Behavioral and Brain Sciences, 34*, 275–290. doi:10.1017/S0140525X11001440.

Fechner, G. T. (1860). *Elemente der Psychophysik*. Leipzig: Breitkopf und Härtel.

Fetherstonhaugh, D., Slovic, P., Johnson, S. M., & Friedrich, J. (1997). Insensitivity to the value of human life: A study of psychophysical numbing. *Journal of Risk and Uncertainty, 14*, 283–300. doi:10.1023/A:1007744326393.

Frederick, S. W., & Fischhoff, B. (1998). Scope (in)sensitivity in elicited valuations. *Risk, Decisions, and Policy, 3*, 109–123. doi:10.1080/135753098348239.

Friedrich, J., Barnes, P., Chapin, K., Dawson, I., Garst, V., & Kerr, D. (1999). Psychophysical numbing: When lives are valued less as the lives at risk increase. *Journal of Consumer Psychology, 8*, 277–299. doi:10.1207/s15327663jcp0803_05.

Gong, M., & Baron, J. (2011). The generality of the emotion effect on magnitude sensitivity. *Journal of Economic Psychology, 32*, 17–24. doi:10.1016/j.joep.2010.10.002.

Hammitt, J. K., & Treich, N. (2007). Statistical vs. identified lives in benefit-cost analysis. *Journal of Risk and Uncertainty, 35*, 45–66. doi:10.1007/s11166-007-9015-8.

Hsee, C. K., & Rottenstreich, Y. (2004). Music, pandas, and muggers: On the affective psychology of value. *Journal of Experimental Psychology-General, 133*, 23–30. doi:10.1037/0096-3445.133.1.23.

Hsee, C. K., & Zhang, J. A. (2010). General evaluability theory. *Perspectives on Psychological Science, 5*, 343–355. doi:10.1177/1745691610374586.

Jenni, K. E., & Loewenstein, G. (1997). Explaining the "identifiable victim effect". *Journal of Risk and Uncertainty, 14*, 235–257. doi:10.1023/A:1007740225484.

Kahneman, D. (2003). A perspective on judgment and choice: Mapping bounded rationality. *American Psychologist, 58*, 697–720. doi:10.1037/0003-066x.58.9.697.

Kahneman, D., & Frederick, S. (2005). A model of heuristic judgment. In K. J. Holyoak & R. G. Morrison (Eds.), *The Cambridge handbook of thinking and reasoning* (pp. 267–293). New York: Cambridge University Press.

Kahneman, D., & Ritov, I. (1994). Determinants of state willingness-to-pay for public-goods: A study in the headline method. *Journal of Risk and Uncertainty, 9*, 5–38. doi:10.1007/bf01073401.

Kahneman, D., Ritov, I., & Schkade, D. (1999). Economic preferences or attitude expressions? An analysis of dollar responses to public issues. *Journal of Risk and Uncertainty, 19*, 203–235. doi:10.1023/a:1007835629236.

Kahneman, D., & Tversky, A. (1979). Prospect theory: Analysis of decision under risk. *Econometrica, 47*, 263–291. doi:10.2307/1914185.

Kleber, J., Dickert, S., Peters, E., & Florack, A. (2012). Same numbers, different meanings: How numeracy influences the importance of numbers for pro-social behavior. Manuscript submitted for publication.

Kogut, T. (2011). Someone to blame: When identifying a victim decreases helping. *Journal of Experimental Social Psychology, 47*, 748–755. doi:10.1016/j.jesp.2011.02.011.

Kogut, T., & Ritov, I. (2005a). The "Identified victim" effect: An identified group, or just a single individual?. *Journal of Behavioral Decision Making, 18*, 157–167. doi:10.1002/bdm.492.

Kogut, T., & Ritov, I. (2005b). The singularity effect of identitied victims in separate and joint evaluations. *Organizational Behavior and Human Decision Processes, 97*, 106–116. doi:10.1016/j.obhdp.2005.02.003.

Li, M., Vietri, J., Galvani, A. P., & Chapman, G. B. (2010). How do people value life?. *Psychological Science, 21*, 163–167. doi:10.1177/0956797609357707.

Lichtenstein, S., & Slovic, P. (2006). *The construction of preference*. New York: Cambridge University Press.

Loewenstein, G., & Small, D. A. (2007). The scarecrow and the tin man: The vicissitudes of human sympathy and caring. *Review of General Psychology, 11*, 112–126. doi:10.1037/1089-2680.11.2.112.

Markowitz, H. (1952). The utility of wealth. *Journal of Political Economy, 60*, 151–158. doi:10.1086/257177.

Payne, J. W., Bettman, J. R., & Johnson, E. J. (1992). Behavioral decision research—A constructive processing perspective. *Annual Review of Psychology, 43*, 87–131. doi:10.1146/annurev.psych.43.1.87.

Peters, E., Västfjäll, D., Slovic, P., Mertz, C. K., Mazzocco, K., & Dickert, S. (2006). Numeracy and decision making. *Psychological Science, 17*, 407–413. doi:10.1111/j.1467-9280.2006.01720.x.

Pham, M. T. (2007). Emotion and rationality: A critical review and interpretation of empirical evidence. *Review of General Psychology, 11*, 155–178. doi:10.1037/1089-2680.11.2.155.

Quiggin, J. (1982). A theory of anticipated utility. *Journal of Economic Behavior and Organization, 3*, 324–345. doi:10.1016/0167-2681(82)90008-7.

Rottenstreich, Y., Burson, K., & Faro, D. (in press). Multiple unit holdings yield attenuated endowment effects. *Management Science*.

Rubaltelli, E., & Agnoli, S. (2011). The emotional cost of charitable donations. *Cognition & Emotion*. doi:10.1080/02699931.2011.613921.

Schelling, T. C. (1968). The life you save may be your own. In S. B. Chase (Ed.), *Problems in public expenditure analysis* (pp. 127–176). Washington, DC: The Brookings Institute.

Singer, P. (1972). Famine, affluence, and morality. *Philosophy & Public Affairs, 1*, 229–243.

Singer, P. (2009). *The life you can save: How to do your part to end world poverty*. New York: Random House Trade Paperbacks.

Sinnott-Armstrong, W. (2011). Consequentialism. In E. N.Zalta (Ed.), *Stanford encyclopedia of philosophy*. Stanford: Stanford University. http://plato.stanford.edu/archives/win2011/entries/consequentialism.

Slovic, P. (1995). The construction of preference. *American Psychologist, 50*, 364–371. doi:10.1037//0003-066x.50.5.364.

Slovic, P. (2007). "If I look at the mass I will never act": Psychic numbing and genocide. *Judgment and Decision Making, 2*, 79–95.

Slovic, P. (2010). The more who die, the less we care. In E. Michel-Kerjan & P. Slovic (Eds.), *The irrational economist: Making decisions in a dangerous world* (pp. 30–40). New York: Public Affairs.

Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. (2002). The affect heuristic. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 397–420). New York: Cambridge University Press.

Slovic, P., & Västfjäll, D. (2010). Affect, moral intuition, and risk. *Psychological Inquiry, 21*, 387–398. doi:10.1080/1047840x.2010.521119.

Small, D. A., & Loewenstein, G. (2003). Helping a victim or helping the victim: Altruism and identifiability. *Journal of Risk and Uncertainty, 26*, 5–16. doi:10.1023/A:1022299422219.

Small, D. A., Loewenstein, G., & Slovic, P. (2007). Sympathy and callousness: The impact of deliberative thought on donations to identifiable and statistical victims. *Organizational Behavior and Human Decision Processes, 102*, 143–153. doi:10.1016/j.obhdp.2006.01.005.

Soyer, E., & Hogarth, R. M. (2011). The size and distribution of donations: Effects of number of recipients. *Judgment and Decision Making, 6*, 616–628.

Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate?. *Behavioral and Brain Sciences, 23*, 645–665. doi:10.1017/S0140525X00003435.

Tinghög, G. (2011). Discounting, preference, and paternalism in cost-effectiveness analyses. *Health Care Analysis*. doi:10.1007/S10728-011-0188-6.

Unger, P. K. (1996). *Living high and letting die: Our illusion of innocence*. New York: Oxford University Press.

Västfjäll, D., Peters, E., & Slovic, P. (2008). Affect, risk perception and future optimism after the tsunami disaster. *Judgment and Decision Making Journal, 3*, 64–72.

Västfjäll, D., & Slovic, P. (2011). Pseudo-inefficacy: When awareness of those we cannot help demotivates us from aiding those we can help. Manuscript in preparation.

von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic behaviour*. Princeton, NJ: Princeton University Press.