Barrier Title: Proportional dominance effect

*Report by David Reinstein*

*See also (Ari’s writeup* [*HERE*](https://docs.google.com/document/d/1zzGTkF5sZnDUtzE-NS3sYOHOLQw8eDxC5Qt3_Wy62wA/edit#heading=h.r4qi0rwohl6r)*)*

# Related Terms

Drop in the bucket; mechanisms include “futility thinking” (Unger?), psychosocial numbing, quantitative confusion/innumeracy

# Description

*1-4 sentence description/definition of the barrier*

(For a given per-dollar impact on the outcome), people are be less willing to donate towards a cause when the magnitude of the underlying problem is (framed as) larger. [Move to mechanisms: A certain amount of impact (e.g., relieving suffering) is perceived as smaller and thus less valuable when the underlying problem is larger.]

# Conceptual Discussion:

*Overview of findings from papers, caveats, how the concept works, etc. Provides context for evidence section; Discussion of the relevant mechanisms at play; Discussion of the relevant established theories*

**Brief on the evidence here**

*Definitional issues and disambiguation*

This needs to be distinguished from scope insensitivity. Note that if people are being analytical, they must *care* about scope in order to care about their impact, and thus (mistakenly) react to the perceived lower impact of donating when the needs are much greater.

PD arguments may also be used as vehicle for motivated reasoning, and thus not be an important driver in itself: E.g., I don’t want to donate so I focus on my impact being a share of the overwhelming need (which I might opportunistically define broadly) to conclude that helping is futile.[[1]](#footnote-0)

To operationalize this, we need to define what the numerator and denominator represent. For the numerator, an (EA) impact-driven individualist donor might consider of her *own* contribution (per dollar or overall) relative to the size of the need. In contrast, a more collectivist/team-reasoning/communitarian thinker might consider the impact of the *total*  expected donation relative to the size of the need. We also need to better define the denominator; how do individuals lump together different groups/problems to define the overall scale of the need, and how sensitive is this to the fundraisers’ framing?

*Mechanisms*

Fetherstonhaugh et al (1997) highlight “Weber’s law”: Humans are sensitive to proportional changes/proportional differences in stimuli (loudness, brightness, etc); thus we are less sensitive to small changes relative to a larger baseline. There is evidence this also holds in assessing losses of life. ... the “subjective value of saving the specified number of lives is greater for a smaller tragedy than for a larger one” .

Baron attributes PD to quantity confusion and classifies this as “contamination by an irrelevant factor”; more generally, this could be seen in terms of *innumeracy*.

This may lead to a lower willingness to contribute to a problem when the apparent scale (or “denominator”) of the problem is larger (e.g., more lives at risk), holding constant the benefit per dollar contributed (cost per life saved). The *perceived* scale of the problem may depend on how it is framed by fundraisers, charities, and the media. However, this may not be completely manipulable: e.g., massive global problems may not be easy to “frame down.”

“Loewenstein and Small (2007) suggested that the PDE is driven by increased sympathy towards the victims when one can help a large proportion of the victim reference-group.” -- Erlandsson et al

# EG Relevance

*How this particular barrier proves problematic for effective giving*

This effect represents a general departure from appropriate assessment of the marginal benefit (per cost) of a particular charity/intervention. Thus this is a general barrier to accurate assessment of effectiveness ergo a barrier to effective giving.

In addition, it might be argued that more effective interventions (e.g., targeting poor Africans versus US poverty) may tend to address problems that are inherently larger in scale and magnitude. These may be intrinsically harder to “frame down”, implying EG will suffer more from this bias.

# State of Evidence

*Key papers: Summarize findings and key takeaways, Short description of methods for relevant studies, Make sure to include both description of evidence and evaluation of evidence*

**Fetherstonhaugh et al 1997** (notes [HERE](https://docs.google.com/document/d/1YHaF4phpqthCEwwNdgd_QBZp5np0pHwHEJm3U2G1cxA/edit#heading=h.8ax2rgfz70of))

Methods

Range of hypothetical scenariae and evaluations, within-subject manipulations only (with clear contrasts), framed as aid/targeting not charitable donations, standard (mostly Economics) student subject pools.

These authors conducted survey experiments on standard (fairly small sample?) student participants. They presented a variety of hypothetical scenariae (e.g., “imagine themselves as a government official of a small, developing country”...), asking for ratings, rankings, etc.

Findings

> Studies 1 and 2 found that an intervention saving a fixed number of lives was judged significantly more beneficial when fewer lives were at risk overall. Study 3 found that respondents wanted the minimum number of lives a medical treatment would have to save to merit a fixed amount of funding to be much greater for a disease with a larger number of potential victims than for a disease with a smaller number.

Evaluation of paper’s evidence:

Strengths - Reasonably realistic frames, (mostly) consistent results across a variety of frames

Limitations - Hypothetical, framed, nonrepresentative, and does not directly address *own* contributions

Within-subject treatments here:

(+) allow estimation of heterogeneous responses,

(+/-) highlight the difference in denominators/proportions, making them salient; but this might also be expected to be an inhibitor of this (seemingly non-rational) effect, especially for the Economics-trained sample

Statistical tests (ANOVA) appear strong and highly significant in most cases, but further investigation warranted (e.g., pre-registration? Evidence of specification fishing and MHT?)

**Erlansson et al (2015)**

(Study 4)

>The PDE-ad was in part based on text from the homepage of a well-known global charity organization focusing on poverty in developing countries. Participants read about Polio and were told that if receiving the expected amount of private donations, it would be possible to vaccinate children so the death rate would decrease by approximately 500 children per year. In the large reference-group version, participants read that 60,000 children in Africa annually die from Polio so the project had a potential rescue proportion of 0.83%. In the small reference-group version, partici pants read that around 500 children in Botswana annually die from Polio so the project had a potential rescue proportion of more than 99%.

...followed by eight questions about par-icipants’ reactions towards the advertisement. The suggested mediators (distress, sympathy, perceived impact and perceived responsibility) were measured with two questions each

...after reading and responding to the three ads, participants were told that thanks to their participation, 10 Swedish Kronor (SEK) $1.50 would be donated to charity. The participants were asked to allocate the money between the three organizations by writing an amount (0–10) after each ad and the sum had to be 10 SEK

...All participants read either one ad from the low end of the effects (statistical victim, large reference-group, out-group victims) plus two ads from the high end of the effects (identified victim, small reference-group, in-group victims) or two ads from the low end plus one ad from the high end.

[Results]

Participants who read the PDE-ad in the small reference-group version had higher helping intentions (M = 3.77, SD = 1.64) than participants who read the large reference-group version, M = 3.46, SD = 1.57; t(430) = 2.01, p = .045. However, participants who read the small reference-group version did not write that they would donate more money if asked (Mean rank = 213.68) than participants who read the large reference-group version (Mean rank = 218.31; Mann–Whitney U = 22720.50, Z = 0.40, p = .686). Despite this, participants who read the small reference-group version allocated more money to the organization distributing Polio- vaccines (M = 4.30 SEK, SD = 2.85) than the participants who read the large reference-group version, M = 3.50 SEK, SD = 2.87; t(430) = 2.91, p = .004. Although not perfectly consistent between the different outcome variables, the results suggest that we replicated the PDE.

Evaluation of evidence (Study 4):

Strengths - Realistic charity frame, reasonable implementation of small/large “reference group” frames, outcomes record both intentional/attitudinal and actual (small) donation measures

Limitations - A choice *among* charities only

Statistical tests -

**Brief on tangential papers (non charity) and papers supporting the mechanism**

**Baron, 1997: “Confusion of Relative and Absolute Risk in Valuation”**

Methods

Hypothetical willingness to pay (wtp) questions. Within-subject manipulations only[[2]](#footnote-1); standard student subject pools, small samples.

S1: Questions about (hypothetical wtp for components of government government health insurance. “[Denominator] people die from this disease each year. Their average age is 60. How much are you willing to pay to cover a treatment that will save the lives of [Numerator] of these people?”... (Numerator=90 or 900; Denominator=100, 1000, or 10,000), all combinations presented to all participants.

S2: Set of causes, each gave wtp for a government program for a 5% reduction in that cause of death and for saving 2,600 lives, also rating prevalence and importance. He reports a very high correlation between wtp by these two measures, an “insensitivity to quantity”, and both wtp measures are higher when subjects report a higher prevalence (even controlling for stated importance).

Evaluation of paper’s evidence: This evidence appears highly limited. There is some evidence that denominators matter when they (arguably) should not, and participants show confusion between proportions and absolute amounts. The second experiment is highly cognitively demanding and participants have no strong incentive to “get this right.” The first experiment has arguable confounds: e.g., one might question the scientific credibility of the treatment that (claims to) save only a small number of lives out of a very large population. The evidence does not seem to offer much strength over and above the Fetherstonhaugh paper. I also found much of the statistical reporting to be incomplete or unclear, especially for study two. In general, this is, at its best, evidence of quantitative confusion which may go in either direction in any given context.

It is also detached from the charity realm, considering the domain of government expenditure and benefits that will accrue to the participant him or herself. For this reason, I listed it is tangential evidence and not charity specific evidence.

**Jenni and Loewenstein (1997)** Provides support for the “reference group effect” (proportional dominance) as an explanation for the identifiable victims bias. (notes [HERE](https://docs.google.com/document/d/1YHaF4phpqthCEwwNdgd_QBZp5np0pHwHEJm3U2G1cxA/edit#))

**Friedrich et al (2008)**

> PN was investigated by varying the supposed number of brak- ing-related traffic fatalities each year as a within-subjects variable and then obtain- ingjudgments of support for a new antilock brake requirement.

> Experiment 1 manipulated respondents' accountability [“...the experimenter will ask you at this time to explain the reasoning behind your decisions and to justify how you arrived at your recommendations”] as a way of exploring whether PN responding is the result of careless or heuristic processing. Extensive work with accountability manipulations has shown them to be effective in debiasing... [other stuff]. … when they expect to have to justify their reason- ing to others, should also be revealing in terms of what they believe constitutes a defensible, normative strategy.

> [also] a manipulation designed to highlight the sa- lience of the individual lives at risk … [a] description of a preventable, fatal accident with named individuals…

> , par- ticipants read that the "Federal Transportation Board” estimated annual fatalities due to driver error in the use of conventional braking systems to be approximately 41,000 ("large problem") or 9,000 ("small problem").

Outcome measures:

* "support-for-intervention", 7-point scale
* “Lives-to-save” “What is the minimum number of these (9,000/41,000) lives at risk ... saved each year before you… require consumers to pay for anti-lock brakes”

Treatments started with one size, then presented a “task force's new estimate” with the reverse.

***Overall evaluation of evidence***

***Evidence gap and suggestions for future work and approaches***

# Solutions

1. Framing
   1. Frame down denominator (suggestive evidence from Fetherstonhaugh, etc)
   2. Report absolute or proportional number of lives that could be saved by an intervention depending on which suggests a smaller denominator (how do you know?)
   3. Highlight numerator (impact) (evidence?)
   4. (Ari:) “Increase evaluability: putting interventions on same page instead of separate pages”
2. De-biasing (discussed further in Friedrich et al - expand)

*Consider:*

* *“The proportion dominance effect was primarily mediated by perceived impact.” (Erlandsson et al, 2015, OBHDP)*
* *“Perceived Utility (not Sympathy) Mediates the Proportion Dominance Effect in Helping Decisions” (Erlandsson et al, 2013)*

*Evidenced solutions, Possible solutions*

1. My thought was that people who do not value saving lives (or are in general unwilling to contribute to it or oppose policies spending money on foreign aid for some other reason, e.g. prejudice) exercise a form of motivated reasoning to justify this (perhaps in a nonstandard way). They choose to reason according to the 'proportional' standard in order to conclude that it is not worth donating to these causes because 'the scope of the problem is too large and they will never be completely solved'. I suggest that people apply this reasoning to problems specifically when they do not want to take action to address these problems. (In contrast, in domains where they do want to make a change, they may use a different, more marginal and 'consistent' sort of reasoning.) E.g., (to be stereotypical) imagine a MAGA person who wants to end foreign aid because "Africa will always have endless problems" but who wants to impose restrictions on abortion (even knowing millions of abortions will continue to occur) because "every unborn life matters." [↑](#footnote-ref-0)
2. They do reverse order of presentations for half the participants. They report a lack of significant order effects, but fail to discuss the power of such tests or examine first-presented choices in isolation. [↑](#footnote-ref-1)