The Moral Miguelitos Present:

Moral Decisions
The neural correlates of moral decision-making: A systematic review and meta-analysis of moral evaluations and response decision judgements.

Garrigan B¹, Adlam AL², Langdon PE³.

Abstract

The aims of this systematic review were to determine: (a) which brain areas are consistently more active when making (i) moral response decisions, defined as choosing a response to a moral dilemma, or deciding whether to accept a proposed solution, or (ii) moral evaluations, defined as judging the appropriateness of another's actions in a moral dilemma, rating moral statements as right or wrong, or identifying important moral issues; and (b) shared and significantly different activation patterns for these two types of moral judgements. A systematic search of the literature returned 28 experiments. Activation likelihood estimate analysis identified the brain areas commonly more active for moral response decisions and for moral evaluations. Conjunction analysis revealed shared activation for both types of moral judgement in the left middle temporal gyrus, cingulate gyrus, and medial frontal gyrus. Contrast analyses found no significant clusters of increased activation for the moral evaluations-moral response decisions contrast, but found that moral response decisions additionally activated the left and right middle temporal gyrus and the right precuneus. Making one's own moral decisions involves different brain areas compared to judging the moral actions of others, implying that these judgements may involve different processes.
Paper’s Goal

1. Where in the brain shows increased activation during moral decision-making?
2. Do moral response decisions and moral evaluations differ in areas of the brain/activation patterns?
3. Do activation patterns change compared to non-moral or neutral decisions
4. Assess quality of experiments
   a. important!
Experimental Procedures

Functional magnetic resonance imaging (fMRI)

Review:

- measures brain activity by examining fluctuations associated with blood flow
- Adds to our understanding of cognitive and affective processes involved in moral decisions
Scientific definition: commonly used method for coordinate based meta-analysis

- Assesses the patterns of activation foci reported in different experiments to establish where in the brain that convergence is higher than would be expected if foci were normally distributed throughout the brain
Breaking down ALE

Don’t know what i just said?

Recap:

1. Taking a bunch of experiments
2. Breaking them down into MRD or ME
3. Separating by certain tasks
4. Comparing data
   a. In this case, fMRI peaks in the brain with the different moral decision tasks
Background on the “Moral Brain”

No evidence for a moral brain

However, brain region is important!

- Lesion studies conclude that ventromedial prefrontal cortex (vmPFC) is important
- vmPFC controls emotions
- MAYBE correlated to theory of mind regions
WHAT IS A MORAL JUDGEMENT?!?!?

The consensus is that there’s NO scientific consensus :) 

Developmental Psychology Definition:

can refer to any judgement made within the moral domain, i.e. judgements relating to moral principles such as harm, justice, and fairness (Smetana, 2006, Turiel, 1983).

Otherwise, moral judgements, reasoning, sensitivity and cognition are all used differently in the experiments......
Differences in Judgement

**Moral Response Decisions**

“What would I do”

**Moral Evaluation**

“Is what you’re doing right?”
What kind of tasks are used to quantify moral decisions?

Moral Response Decision examples:
- Moral vs non-moral
  - Y/N Button: Would you do it? Is it wrong to do it?

Moral Evaluation examples:
- Moral (harmful) vs neutral
  - Deciding if main character’s actions were wrong or “not wrong”
  - Likert scale of how “wrong” something was
Mini Experiment (neutral)

On a scale of 1-5, how much would you like to go to the beach?
Mini Experiment (harmful)

On a scale of 1-5, how much would you like to kill someone?
28 Experiments

271 foci, 642 participants

10 MRD, 18 ME
Findings

28 experiments:
- 20 high quality, 8 medium, none low

Moral Evaluation:
- 6 significant clusters found

Moral Response Decision:
- 6 significant clusters found

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Table 3
Significant clusters of activation for moral evaluations, moral response decisions, and conjunction and convergence analysis.

X, y, z coordinates are reported in Talairach space and refer to the maximum value of each cluster. Moral evaluation and moral response decision ALE analyses performed using cluster-level = 0.05, 1000 permutations, p = 0.001. Conjunction and contrast analysis performed using p = 0.01, 1000 permutations, minimum volume > 200 mm³. Labels and Brodmann areas generated by GingerALE 2.3.4. MFC = medial frontal gyrus, STG = superior temporal gyrus, CG = cingulate gyrus, MTC = middle temporal gyrus, IFC = inferior frontal gyrus.
Findings

Moral Evaluation:
- 2 in medial frontal gyrus
- Left superior temporal gyrus
- Left cingulate gyrus
- Right STG
- Right MFG

Moral Response Decision:
- Left middle temporal gyrus
- Left precuneus
- Right MFG
- Right MTG
- Right inferior frontal gyrus
- Left caudate

Fig. 2. Brain activation maps showing significant clusters of activation. Images created in GingerAle 2.3.4, overlaid onto Colin 2 × 2 × 2 template in Minda. (Lancaster & Mathias, 2008–2015) Brain images are axial, sagittal and coronal view of main clusters of activation for each ALE analysis. Image labels: 1 = left, R = right, P = posterior, A = anterior, S = superior.
What are the implications of these studies?

Because it's pretttyyyyy important.

1. Confirms moral judgements are associated with increased activation in the brain:
   a. 3 significant clusters of shared brain activation for both task types
   b. MTG, CG and MFG
2. Confirms that there is no moral brain
   a. Significant clusters are all over the brain and involves an extended network
3. Confirms that MRDs show increased activation of more self-referential parts of the brain areas
   a. Precuneus is much more developed than animals
   b. Could be correlated to tasks that require more abstract thinking
Why is this paper groundbreaking?

PREVIOUSLY:

- ventromedial prefrontal cortex took all the credit for moral decision making
  - Study suggests that since only one cluster of activation was present in this area, that only ME’s were considered
- FIRST of its kind to compile moral decision-making papers by different types of moral decisions and compare brain activity accordingly
Limitations of the Analysis

Not enough sources

1. 15 recommended, only 10 MRD sources
2. Ambiguity in study, specifically if MRD or ME
3. Differences in emotional engagement with tasks
   a. Possibility of DEATH vs regular life decisions
4. Inappropriate control task
What are the new questions that arise from this study?

1. Is it different in adolescents?
   a. They were excluded
2. Is it different in children?
   a. Also excluded
3. Would results differ with more real life scenarios?
   a. Which would be more relevant to most of us!
AS ALWAYS... MORE STUDIES ARE NEEDED :)
The Trolley Problem: Turn Left, Turn Right, or Multi-Track Drifting
The Main Approaches

Utilitarian

Deontological
Emotions and Decisions

Is someone's morality affected by their emotions?

Do decisions made when faced with a moral dilemma reflect an individual's values?

What factors determine if an individual makes a utilitarian choice vs a deontological one?
Influencing Moral Decisions through Emotional Control

Poker-faced morality: Concealing emotions leads to utilitarian decision making

Jooa Julia Lee, Francesca Gino*
Harvard University, United States

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Abstract
This paper examines how making deliberate efforts to regulate aversive affective responses influences people’s decisions in moral dilemmas. We hypothesize that emotion regulation—mainly suppression and reappraisal—will encourage utilitarian choices in emotionally charged contexts and that this effect will be mediated by the decision maker’s decreased deontological inclinations. In Study 1, we find that individuals who endorsed the utilitarian option (vs. the deontological option) were more likely to suppress their emotional expressions. In Studies 2a, 2b, and 3, we instruct participants to either regulate their emotions, using one of two different strategies (reappraisal vs. suppression), or not to regulate, and we collect data through the concurrent monitoring of psycho-physiological measures. We find that participants are more likely to make utilitarian decisions when asked to suppress their emotions rather than when they do not regulate their affect. In Study 4, we show that one’s reduced deontological inclinations mediate the relationship between emotion regulation and utilitarian decision making.
The Deontological approach can often be viewed as an “irrational” one

Personal, ME HURT YOU, dilemma’s tend to activate affective regions of the brain and lead to more Deontological Decisions

Visualizing harm vividly increases tendency for deontological decisions

Damage to ventromedial prefrontal cortex results in more utilitarian decisions

Collapse of Compassion
Two Methods for Emotional Control

Emotional Suppression
- Concealing Emotions felt
- Doesn’t make people feel less bad
- Impairs memory and problem solving

Cognitive Reappraisal
- Reappraisal is reinterpreting a scenario
- Makes individuals feel less negative
- Reduces experience of emotions
Do Emotional Suppression and Reappraisal reduce Deontological Inclination?
### 4 Studies

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<th>Study 1: Are utilitarian decision makers more willing to use regulatory strategies than deontological ones</th>
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<td>Study 2: Does assigning someone to a regulatory strategy increase utilitarian decision making?</td>
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<td>Study 3: Does asking somebody to regulate their emotions for a prior task influence moral decision making?</td>
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<td>Study 4: Are moral decisions facilitated through reduced deontologism or increased utilitarianism</td>
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**Results:**

- **Study 1:** More willing to suppress, no difference for reappraisal
- **Study 2:** Emotional suppression increased utilitarianism, not as clear with reappraisal
- **Study 3:** Even when suppression of emotion is applied to unrelated stimuli, utilitarianism prevails
- **Study 4:** Strategies decreased deontological inclinations, left utilitarian inclinations unaffected
5 Methods

Study 1: Person decided whether to spend $2mil to save a child's life, or for hospital needs that would save 200 lives. Asked participants about their emotions and willingness to employ emotional regulation strategies.

Study 2a: Randomly assigned people to suppression, reappraisal, or control, then rated if utilitarian decision of agents in moral dilemma was appropriate.

Study 2b: Randomly assigned participants watched a scene of a moral dilemma and asked to make a decision, skin conductance test for emotions.

Study 3: Participants were told they would complete 2 unrelated surveys, were first instructed to use emotional regulation strategy for viewing aversive images, then, completed a survey involving moral dilemmas.

Study 4: Blocked behind paywall. Some complex method of determining deontological inclinations through comparing incongruent (utilitarian and deontological conflict) and congruent (deontological is obvious best choice) scenarios.
Totalitarian countries or corporate workplaces and everything in between

Be wary of those who do not express emotion when engaging in a conversation with you

Morality isn’t as straightforward as we think, people’s values can change

Demonstration of embodied cognition power to influence not only associations, but also decisions

Just because someone didn’t show emotion when making a hard decision doesn’t mean they don’t feel bad

Impact of culture and society on human behavior, men may become more utilitarian, women deontological

The true meaning of religion is thus not simply morality, but morality touched by emotion.

~ Matthew Arnold
Limitations
Feeling Socially Connected Increases Utilitarian Choices In Moral Dilemmas
Some Background on “Utilitarianism”

- “Utilitarian”- designed to be useful or practical rather than attractive

- Utilitarian choices promote the greatest good for the greatest number of people
“High conflict dilemmas elicit aversive moral emotions and typically up to 90% of respondents forego the utilitarian option” (Cushman, Young, & Hauser, 2006)

Past studies involving the footbridge dilemma, which requires physically pushing someone to their death to stop a runaway trolley from killing five others farther down the track
Past Studies

- Recent empirical evidence suggests that social connections may actually encourage utilitarian choices in moral dilemmas.
  - (Kurzban, DeSciolo, and Fein (2012))
    Looked at people’s willingness to endorse the utilitarian choice but entailed sacrificing a brother, a friend, or a stranger, to save five people of the same type in the footbridge dilemma.
  - Findings: people made more utilitarian choices when dilemma involved:
    - Brothers (47%)
    - Friends (41%)
    - Strangers (28%)

- (Cikara, Fransworth, Harris, & Fiske, 2010)
  Found “people were more willing to make a utilitarian trade offs when their choices involved saving in-group members.

This shows that there is a positive relationship between social connection and utilitarian choice!
HOWEVER...

These studies fell short on distinguishing the difference between feeling socially connected from other rational elements and obligations such as (kin vs. non-kin, in group vs. out of group members) which would arguably shift the true reasoning behind the utilitarian decision.
Aversion to Harm and Moral Judgement

“The prospect of directly harming another person is psychologically aversive and elicits strong moral affect” (Cushman, Gray, Gaffey, & Mendes, 2012; Haidt, 2001; Turiel, 1983)

This can be observed in the electric shock test (Milgram 1974) where participants were less willing to deliver the shock by physically touching the victim’s hand as opposed to delivering the shock from a distance.

This ties into the dual-process theory of moral judgment: suggests that the direct harm in high-conflict dilemmas activates social and moral affect that competes with utilitarian reasoning to impact judgment. (Greene, Nystrom, Engell, Darley, & Cohen, 2004)

In support of this theory, factors that bolster the processing of moral affect reduce utilitarianism and factors that mitigate its impact increase utilitarianism, e.g. visual imagery and incidental positive affect, respectively (Amit & Greene, 2012; Valdesolo & DeSteno, 2006)

This means that factors that stimulate the processing of moral affect (such as physically touching somebody to harm them) will reduce utilitarianism and vice versa.
As you may know (or not), humans desire social connection. It is part of our very nature.

Social connection brings forth better emotional, cognitive, and physiological health. (ie less stress due to feeling socially connected)
Research finds that feeling socially connected promotes the regulation of aversive affect (Beckes & Coan, 2011) “aversive affect” meaning avoiding influence

In one study, women who held the hand of a spouse, compared to the hand of a stranger or no hand-holding, reported less unpleasantness and showed less neural threat response to expectations of receiving a painful electric shock (Coan, Schaefer, & Davidson, 2006)

In another study clinically anxious youths were exposed to threat-related words and those who completed the task in the presence of their caregiver displayed less emotional reactivity than those who completed the task without their caregiver present (Conner et al., 2012)

These studies suggest that, in moral dilemmas, feeling socially connected may reduce the moral affect that typically inhibits willingness to harm one person to save five and increase utilitarian choice.

Consistent with this logic, one study found that the presence of a close compared to a distant other increased people’s willingness to endorse using harmful interrogation tactics on a detained terrorist (Waytz & Epley, 2012)
Overall Purpose of 3 studies: test whether feeling socially connected increases utilitarian choice in high-conflict moral dilemmas.

The difference in these studies from the ones previously described is that the “social connection” factor was manipulated outside of the experiment. This eliminates the other elements of social relationships (e.g. kin versus non-kin categorizations) (particularly in the tests) and test whether the psychological experience of social connection significantly impacts moral judgment.
Study 1

Purpose: In Study 1 we manipulated whether participants engaged in a social interaction or solitary activity.

Prediction: Those who engaged in social interaction would feel more socially connected and make more utilitarian choices. Because moral emotions are a more central determinant of choice in the footbridge, compared to the switch dilemma, we expected social connection to increase utilitarian choices in the footbridge to a greater extent than in the switch dilemma.
Procedure: Ninety-four White undergraduates (Mage = 20.27, SDage = 1.39; 62% women) came to the laboratory in groups of 4–10 and were compensated $15 each. Data from three participants who guessed the hypothesis were excluded from analysis, leaving a final sample of 91.

Stage 1: the experiment asked participants to complete filler tasks in a breakout room for 15–20 min either by themselves (no-interaction condition) or with a randomly assigned partner (interaction condition). To promote positive interactions in the interaction condition, partners were matched on race (i.e. Caucasian) and gender. Additionally, the first task was an “ice-breaker” in which partners discussed their personal interests; no-interaction condition participants wrote about their personal interests by themselves.

Stage 2: participants were separated and privately responded to the switch and the footbridge trolley dilemmas, in that order. They made binary choices, Yes (pull the switch or push the man) or No (do not pull the switch or do not push the man). To measure social connection, participants indicated how much they felt socially connected, accepted, and lonely (5-point scales; 1 = not at all, 5 = very much so; α = .69). Given previous research linking positive affect and utilitarianism (Valdesolo & DeSteno, 2006), participants also completed the PANAS to allow us to test for possible effects of positive (α = .86) and negative (α = .83) affect.
Study 1 (continued)

Results/Findings:

Social connection manipulation check: Those in the interaction condition (M = 3.92, SD = .59) reported feeling more socially connected than those in the no-interaction condition (M = 3.43, SD = .91), t(89) = 3.01, p = .003, d = .63.

Utilitarian choice: Chi square analyses revealed a significant effect of condition in the footbridge dilemma but not in the switch. In the footbridge dilemma, the odds of endorsing the utilitarian choice in the interaction condition (14/45; 31%) was 3.01 times greater than in the no-interaction condition (6/46; 13%), X² = 4.33, p = .037. In the switch dilemma, the odds of endorsing the utilitarian choice in the interaction condition (41/45; 91%) was 2.16 times greater than in the no-interaction condition (38/46; 83%), X² = 1.44, p = .231.1

Mediation analysis: Next we tested whether feelings of social connection mediated the relationship between interaction condition and utilitarian choice. In this case, because the operationalization of the independent variable diverges sufficiently from the underlying construct (social connection is operationalized as social interaction), mediation can be a valuable way to demonstrate that the main effect occurred through the intended process. Feelings of social connection significantly mediated the relationship between interaction condition and utilitarian choice (Fig. 1). Self-reported social connection significantly predicted utilitarian choice, X² = 4.29, p = .038, and weakened the main effect of interaction condition on utilitarian choice, X² = 2.11, p = .15. The bootstrapped 95% confidence interval with 5000 resamples did not contain zero, indicating a significant indirect effect, CI[.10, 1.28].
Study 2

**Purpose:** Study 2 replicated Study 1 using a different social connection manipulation, i.e., dyad racial composition. In the same-race condition, two White participants were paired together and in the mixed-race condition, a White and a Black participant were paired.

We expected participants in same-race dyads to experience stronger social connection (Trawalter, Richeson, & Shelton, 2009) and, consequently, make more utilitarian choices.
**Procedure:** Seventy-six undergraduates (Mage = 19.97, SDage = 1.32; 52% women) came to the lab in same-gender groups of 8–12 and were compensated $15 each. Responses from one participant were lost due to a computer malfunction, leaving 75 for analysis. No participants guessed the study hypothesis. The only structural difference from the procedure of Study 1 was to replace the no-interaction condition with mixed-race dyads (1 White, 1 Black). After responding to the switch and footbridge dilemmas, participants reported their feelings of social connectedness by rating their partner’s likeability, familiarity, their interest in working with their partner in the future, and how much they thought their partner was interested in getting to know them (7-point scales; 1 = not at all, 7 = extremely; α = .82).

![Diagram](image-url)

**Fig. 1.** Feelings of social connection mediate the relationship between interaction condition and utilitarian choice, Study 1; *p < .05, **p < .01.
Study 2 (continued)

Results:

**Social connection manipulation check:** Those in the same-race condition (M = 5.48, SD = 1.00) felt significantly more socially connected than those in the mixed-race condition (M = 4.88, SD = 1.13), t(73) = 2.37, p = .021, d = .55.

**Utilitarian choice:** In the footbridge dilemma, the odds of endorsing the utilitarian choice in the same-race condition (15/31; 48%) was 2.50 times greater than in the mixed-race condition (6/22 White, 6/22 Black; 27% each), X² = 3.52, p = .06. In the switch dilemma, the odds of endorsing the utilitarian choice in the same-race condition (27/31; 87%) was 1.04 times less than in the mixed-race condition (20/22 White, 20/22 Black; 91% each), X² = .28, p = .60.

**Mediation analysis:** Self-reported social connection did not have a significant indirect effect on utilitarian choice, X² = .02, p = .887. The 95% confidence interval contained zero, indicating a non-significant indirect effect, CI[− .29, .39]. Consistent with Study 1, social interactions that fostered relatively more social connection increased utilitarian choice. Further, the effect did not depend on the choices of Black versus White participants. In this study, self-reported social connection did not statistically mediate responses to the footbridge. In Study 3 we address this by directly manipulating the psychological experience of social connection.
Study 3

**Purpose**: Studies 1–2 manipulated social connection indirectly via real social interactions with high ecological validity. In Study 3 we manipulated social connection with a writing task to more directly alter the psychological experience of social connection.
Study 3 (continued)

Procedure: One-hundred seventy-two respondents (Mage = 35.56, SDage = 13.57; 47% women) from Amazon's Mechanical Turk participated in exchange for a small sum of money. First, participants completed a writing task, titled “Thinking About Other People”, that manipulated social connection. Instructions were adapted from Waytz and Epley (2012).

Those in the close-other condition read:

“Think about someone with whom you currently feel like you have a close relationship. Take a moment to think about how being with this person makes you feel. Please write about a time that made you feel especially close to this person. What happened? How did you feel?”

Those in the distant-other condition read:

“We would like you to think about someone you have seen before or been in brief contact with, but who you are not acquainted with, i.e. you do not know this person well. A few examples of such a person might be the person who works at the coffee shop that you buy coffee from, but have never had a full conversation with. Or a person whom you see in class or around your office but have never spoken to. Even though you do not know much about this person, please write about him or her. What do you think this person's personality is like? What do you think it might be like to hang out with this person?”
Study 3 (continued)

Procedure (continued):

Participants then responded to the switch and footbridge dilemmas. As a manipulation check, participants indicated the closeness of their relationship with the person they wrote about in the recall task (5-point scale; 1 = we have a very distant relationship, 5 = we have a very close relationship). We expected those who thought about a close other to make more utilitarian choices than those who thought about a distant other.
Study 3 (continued)

Results:

Manipulation check: Those in the close-other condition (M = 4.67, SD = .71) reported a significantly closer relationship with the person they wrote about than those in the distant-other condition (M = 1.69, SD = .88), t(170) = 24.58, p < .001, d = 3.75.

Utilitarian choice: In the footbridge dilemma, the odds of endorsing the utilitarian choice in the close-other condition (39/88; 44%) was 2.72 times greater than in the distant-other condition (19/84; 23%), X^2 = 9.05, p = .003. In the switch dilemma, the odds of endorsing the utilitarian choice in the close other condition (68/88; 77%) was 1.10 times greater than in the distant other condition (59/84; 70%), X^2 = 1.10, p = .294.
Overall Findings

Three studies manipulated social connection using either live social interactions (Studies 1–2) or a recall task (Study 3) and found consistent evidence that feeling socially connected increased utilitarian choices in the footbridge dilemma. Consistent with predictions, this effect was attenuated in the switch dilemma, where moral affect plays less of a role in people's responses.

Our results resonate with social relational models of moral judgment in which moral decisions are contingent on the social motivations and relational frames of those involved (Rai & Fiske, 2011).

Consideration of social-motivational factors is critical for understanding real world moral decisions that are often embedded in complex social and cultural contexts and that often involve tradeoffs between competing social motivations. For example, whistleblowers trade off fairness and loyalty, and violent extremists trade off harm to some and the good of their group (Ginges & Atran, 2011; Waytz, Dungan, & Young, 2013).

UCSD = socially disconnected = non-utilitarian decisions

= ??????
Moral Decisions in Action
How do we make moral decisions?

Two Sides of Morality

- What we preach
- What we actually do

Moral Rules We Follow

- Most important moral rule to follow is not to harm another human being even when it could be for the greater good
  - How well do we actually follow This?
  - How would we react if Self Gain was involved?
Hypothetical Moral Decisions VS Real Moral Decisions

- Are results hypothetical moral dilemmas accurate of how people would really respond?
- Trolley Problem
  - There is hypothetical answer as in what you think you would do
  - There is real answer of what you actually would do
  - What if there was an incentive to pick one decision over the other?
"What We Say And What We Do: The Relationship Between Real And Hypothetical Moral Choices."

By: Oriel FeldmanHall
Introduction

- Question: What moral decisions do people actually make in situations versus what they say?
  - Unclear how much moral decisions are affected in real-time especially when people have a choice with self-benefit

- Importance of this article: Shows how people would react when actually making a decision instead of a hypothetical one
  - Most studies on moral decision-making is based on hypothetical situations

- Most moral decisions made in the world have to do with choosing not to harm others against maximising self-gain
Overview

- Uses two studies to show how real moral decisions can dramatically contradict moral choices made in hypothetical scenarios.
- Shows how those decisions can become more aligned by enhancing the contextual information available.
  - Shows that previous studies may not have been accurate in predicting morals decisions in everyday life.
  - Also includes what factors influence moral decisions.
Study One

Pain Versus Gain
- 1A Prediction: “subjects would postulate that in real moral scenarios people would be more likely to abide by the harm principle than those imagining doing the same scenarios.”
- 1B Prediction: “when motivational forces are concrete and real rather than presented in a hypothetical scenario, the incentive for significant self-benefit would become more compelling than the proscription not to harm others”
Study One
Continued

- Used both real and hypothetical versions of a “Pain versus Gain” paradigm
- Moral Choice: benefit oneself financially or prevent physical harm to another. Decide how much money they would spend of 20 Euros to prevent physical harm on another person (20 trials and could pay up to E1)
  - Deciders watched receiver get shocked via video feed and is aware of shock level
  - Money kept was also randomly multiplied at the end with a maximum chance of 200 Euros
Study 1 Results

- Both predictions were correct
  - 1A Results: people believed they would follow the do know harm rule
  - 1B Results: Opposite of 1A prediction
- 100% of subjects in the real situation kept a portion of the money
- Findings: The rule of not harming others did not really matter if personal-gain was the stake
Study Two

Enriched version of study 1b (3 New hypothetical PvG)

- **Enriched Scenario Pain versus Gain**
  - a longer written version of the hypothetical task used in Study 1b
- **Trial-by-Trial Pain versus Gain**
  - computer-administered version where participants actually worked through the 20 trials knowing that the task was hypothetical but did not meet the Receiver or experience a sample shock
- **Near Real Pain versus Gain**
  - Identical to the Real Pain versus Gain (study 1b), but the shocks and money were imaginary
Conclusion

- Moral decisions that are made vary when it is real versus hypothetical
  - Hypothetical moral dilemmas may not be accurate on our real moral decision-making
- The proscription to do no harm does not matter when there is self-gain
Should I save or should I not kill?
——Decision making in moral dilemmas
Firstly, let’s take a look at what we have learned.

And this should be familiar :) If not, please go over the midterm material. (Or slides)

The psychological and neurobiological processes underlying moral judgement have been the focus of many recent empirical studies. Of central interest is whether emotions play a causal role in moral judgement, and, in parallel, how emotion-related areas of the brain contribute to moral judgement. Here we show that six patients with focal bilateral damage to the ventromedial prefrontal cortex (VMPC), a brain region necessary for the normal generation of emotions and, in particular, social emotions, produce an abnormally ‘utilitarian’ pattern of judgements on moral dilemmas that pit compelling considerations of aggregate welfare against highly emotionally aversive behaviours (for example, having to sacrifice one person’s life to save a number of other lives). In contrast, the VMPC patients’ judgements were normal in other classes of moral dilemmas. These findings indicate that, for a selective set of moral dilemmas, the VMPC is critical for normal judgements of right and wrong. The findings support a necessary role for emotion in the generation of those judgements.
The present research focuses on how people decide what to do in dilemmas involving conflicting moral rules.

Three studies are reported that indeed demonstrate that the most accessible rule influences willingness to intervene within footbridge dilemmas. This effect is found even when the accessibility of the rule is induced subliminally.
3 studies: 1&2 are supraliminally (existing above the threshold of consciousness) and 3 is subliminally perceived by or affecting someone's mind without their being aware of it.

The three studies reported here examine the effects of a difference in situational accessibility of one rule or the other on the willingness to intervene in footbridge dilemmas.
Before we start:
Utilitarianism:
Right act is the one producing the greatest outcome for the greatest number of people.

Deontology:
A moral framework stating that there is a set of moral duties or obligations that people must honor regardless of the consequences.
Trolley Dilemma and Footbridge Dilemma:

The anterior cingulate cortex (ACC), a brain region associated with cognitive conflict shows increased activity when people have to answer footbridge dilemmas, reflecting presumed conflict between cognitive and social–emotional processes when answering these dilemmas.

In addition, research suggests that footbridge dilemmas provoke physiological processes linked to uncertainty. Activation of the ACC has also been related to people's management of their feelings of uncertainty.

Uncertainty and ambiguity matter: MIDTERM--experience.

Thus: The moral rule that is most accessible during the decision making process (“Save lives” or “Do not kill”) will influence how people solve these dilemmas.
Environmental priming may also lead to differential accessibility of specific rules at any given time. When the environment or context enhances the accessibility of the rule “Save as many people as possible,” the “Save lives” rule will be relatively more accessible than the “Do not kill” rule and individuals will perceive the dilemma as a saving lives problem. They will be more likely to pursue the “saving” course of action at the expense of the “Do not kill” course of action, and they will save the five people at the expense of one.

On the other hand, when the “Do not kill” rule is made more accessible, this rule will dominate the conflict and individuals will perceive the dilemma as a problem that is not about actively killing.

When moral dilemmas direct people's attention to violations of moral rules, deontological reactions exert a stronger influence on judgments than when people's attention is directed to the consequences of action.
Study 1:

Study 1 was a field experiment in which participants were primed with either the “Save lives” or “Do not kill” rule by means of two open-ended questions that asked participants to think about either rule.
During missions abroad soldiers have to apply to certain rules. This is called a mandate. During a conflict in 1994 in Congo, Africa, the mandate of the UN peace keeping force present in the country was not to use any armed violence to end the conflict. Despite several warnings beforehand and during the conflict by the UN commander in chief on the spot, the Canadian lieutenant–general Roméo Dallaire, UN-soldiers were not allowed to conduct any offensive actions. They were only allowed to use their weapons when they themselves were attacked. The mandate was based on the principle “Do not kill”.

During missions abroad soldiers have to apply to certain rules. This is called a mandate. During a conflict in 1994 in Congo, Africa, the mandate of the UN peace keeping force present in the country was to use armed violence to end the conflict. As a result of several warnings beforehand and during the conflict by the UN commander in chief on the spot, the Canadian lieutenant–general Roméo Dallaire, UN-soldiers were allowed to conduct offensive actions. They were both allowed to use their weapons to protect the civilian population, as well as when they themselves were attacked. The mandate was based on the principle “Save lives”.

Study 1:
After reading the story, participants were asked two open-ended questions. First, participants were asked to **put themselves in the position of the lieutenant–general** and were asked to **write down how they would act** in line with either the “Saving lives” or the “Do not kill” mandate. Secondly, participants were asked to **think about and write down** what the specific rule, either “Saving lives” or “Do not kill”, meant for them in their daily lives. Subsequently, participants were asked to **rate how they felt at the moment** on the 20 items of the PANAS (1=not at all, 8=very strongly).
After reading the dilemma participants in all conditions were asked questions about whether they would intervene in the dilemma. For example, “To what extent do you feel obliged to save the five persons on the track at the cost of the one person?”, “To what extent do you feel called upon to save the five persons?” (1 = certainly not, 7 = certainly)
The results of Study 1 demonstrate that individuals confronted with the footbridge dilemma and primed with the rule “Save lives” have a greater willingness to intervene in the dilemma than those primed with “Do not kill”. For individuals confronted with the trolley dilemma no differences in willingness to intervene were found between conditions that primed participants with one rule or the other.
Study 2 was designed to address the potential shortcomings and replicate the results of Study 1 by using more subtle primes.

People's moral context goes beyond simple words such as “fair” or “moral” flashed subliminally. Thus, symbols were used to represent complex ideas.

Control condition is introduced to determine which rule affects the willingness to intervene more.
Regarding the rule “Save lives” the pre-test pointed to the logo of the Red Cross, the symbol of an ambulance, and an image of a lifebuoy. For the rule of “Do not kill” the symbols most associated with the rule were the peace logo, an image of the Ten Commandments, and the logo of the Dutch organization “Tegen Zinloos Geweld” (Against Senseless Violence). In the control condition we used images of a table, a chair and a wheel of a bicycle.
Participants were asked to solve sliding puzzles. Each puzzle consisted of eight pieces and one empty spot. The solutions of the puzzles were the symbols found in the pre-test to be associated with either the “Save lives” or “Thou shall not kill” rules.

After the third puzzle, participants were asked to continue with an ostensibly unrelated human decision making task by filling out a questionnaire. This questionnaire was the same as in Study 1, including the PANAS and the footbridge or trolley dilemma.

An example of a scrambled version and solution of the symbols used in the sliding puzzle task in Study 2. This example uses the logo of the International Red Cross, and was part of the “Saving lives” manipulation.
For participants confronted with the footbridge dilemma a significant difference in willingness to intervene was found between the different conditions. Furthermore, planned comparisons revealed that participants confronted with “Saving lives” symbol puzzles were more willing to intervene in the footbridge dilemma than participants confronted with “Do not kill” and control puzzle. Participants in the control condition and participants confronted with “Do not kill” puzzles did not differ in their willingness to intervene. Furthermore, no significant difference in the willingness to intervene between the different priming conditions was found for participants who read the trolley dilemma.
Thus, the rule of “Save lives” and not the rule of “Do not kill” seems to be responsible for the interaction effect. This is important because several researchers in the moral judgment literature have argued that for the footbridge dilemma "Do not kill" is prepotent.
Study 3 tried to replicate the findings of Study 2 by presenting the primes subliminally using a parafoveal priming task.

To make sure that the primed stimuli were presented outside of participants' perceptual field and therefore outside their conscious awareness, participants in Study 3 first performed a parafoveal-priming task.

In this procedure, stimuli are presented in the parafoveal field (i.e., outside the most sensitive part of the retina), where information cannot be consciously perceived at short presentation times.
We explained to the participants that arrows would appear just above the center of their computer screens. By adding a task (responding to left or right arrows) that requires people to attend to the middle of the screen this possibility is minimized. A fixation point consisting of three X'ses was continuously presented in the center of the screen. Participants were told that because of the unpredictable timing of the appearance of the arrows the best way to detect the direction of the arrows was for them to keep their eyes on the fixation point at all times.

Furthermore, participants learned that the arrows would be accompanied by very short flashes that would appear on the screen at unpredictable locations and times. In fact these flashes consisted of the images we used in Study 2.
The images would appear in one of the four corners of the screen. The four corners corresponded with the parafoveal locations on the screen, that is outside people's visual field and therefore outside people's conscious awareness. Following the parafoveal-priming task, a new and unrelated task started in which participants were asked to fill in a questionnaire that measured how they felt at that moment.

This task introduced either the footbridge or trolley dilemma to our participants. After reading one of the two dilemmas, participants were asked questions about whether they would intervene in the dilemma. The items used were the same items as used in Study 2 and were averaged to form a reliable scale indicating the willingness to intervene.
For the *footbridge dilemma* participants primed with symbols associated with the rule “Save lives” were more willing to intervene in the dilemma than were participants primed with symbols associated with the rule “Do not kill”. In the *trolley dilemma* condition, no significant difference in willingness to intervene was found between participants primed with symbols associated with the rule “Save lives” and participants primed with symbols associated with the rule “Do not kill”.

*Fig. 3.* Willingness to intervene (on a scale from 1 to 7) in footbridge and trolley dilemmas as a function of subliminal priming of “Saving lives” and “Do not kill” symbols (Study 3). Higher bars indicate greater willingness to intervene.
Study 1 showed that making accessible the rule “Save lives” resulted in a greater willingness to intervene than did making accessible the rule “Do not kill”.

Study 2 replicates and extends these findings by using symbols that represent the respective moral rules as subtle situational cues. Study 2 demonstrated that when the rule “Save lives” was primed by presenting related symbols supraliminal, individuals in footbridge dilemmas again showed a greater willingness to intervene than when symbols regarding “Do not kill” or neutral symbols were presented.

In Study 3 priming the rule “Save lives” again resulted in a greater willingness to intervene in footbridge dilemmas than did priming the rule “Do not kill”. The use of moral rules during the decision making process can be unconscious and that therefore people often cannot verbalize how their decisions are linked to specific rules. People make moral decisions as a result of which rule is most accessible cognitively at the time of deciding.
Utilitarianism and deontology that are assumed to play a role in moral decision making according to the morality literature indeed seem to influence the decision making process within moral dilemmas. This influence even can take place outside people's awareness by priming symbols associated with rules related to these frameworks as subtle situational cues.

The rule that is most accessible during the decision making process subsequently influences the willingness to intervene and the outcome of footbridge dilemmas. As a result of priming the rule “Save lives” a utilitarian perspective is more accessible and therefore people are directed towards saving lives and subsequently show a bigger willingness to intervene.
Thank You!

—David Glukhov, Stephanie Zhou, Kyle Cook, Palmer Bonebrake, Lupeng (Phil) Fan
AKA THE MORAL MIGUELITOS


Dr. Mary Boyle, Lecture slides, Jan 2019