材料清单

1， 2001 年 9 月 14 日《科学》杂志上的原始英文研究论文。

《An fMRI Investigation of Emotional Engagement in Moral Judgment》

2， 方舟子在 2001 年 10 月 4 日《南方周末》上的科普文章。

《科学地解决道德难题？》

3， 方舟子对剽窃指控的反驳和科学杂志对剽窃指控的结论。

《“ 方舟子剽窃铁证如山 ”的真相》

4， 方舟子对佘振苏和肖传国参选院士的质疑材料。

《脚踏两只船的院士候选人》 （《北京科技报》2005 年 9 月 21 日）

An fMRI Investigation of Emotional Engagement in Moral Judgment

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matic assays using a wide range of in vitro conditions. Furthermore, once the proteins are prepared, proteome screening is significantly faster and cheaper. Using similar procedures, it is clearly possible to prepare protein arrays of 10 to 100,000 proteins for global proteome analysis in humans and other eukaryotes.

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10. For details of 96-well format protein purification protocol, a full list of results from all the experiments, and the design of the positive identification algorithms, please visit our public Web site (http://bioinfo.mbb.yale.edu/proteinchip) and supplementary material at *Science* Online (www.sciencemag.org/cgi/content/full/1062191/DC1).
11. Biotinylated calmodulin (CalBiochem, USA) was added to the proteome chip at 0.02 μg/μl in phosphate-buffered saline (PBS) with 0.1 mM calcium and incubated in a humidity chamber for 1 hour at room temperature. Calcium (0.1 mM) was present in buffers in all subsequent steps. The chip was washed three times with PBS at room temperature (RT, 25°C). Cy3-conjugated streptavidin (Jackson IR, USA) (1:5000 dilution) was added to the chip and incubated for 30 min at RT. After extensive washing, the chip was spun dry and scanned using a microarray scanner; the data was subsequently acquired with the GenePix array densitometry software (Axon, USA).
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22. Positives were identified using a combination of the GenePix software which computes a local intensity background for each spot and a series of algorithms we developed. Details can be found at http://bioinfo.mbb.yale.edu/proteinchip and at www.sciencemag.org/cgi/content/full/1062191/DC1.
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An fMRI Investigation of Emotional Engagement in Moral Judgment

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The long-standing rationalist tradition in moral psychology emphasizes the role of reason in moral judgment. A more recent trend places increased emphasis on emotion. Although both reason and emotion are likely to play important roles in moral judgment, relatively little is known about their neural correlates, the nature of their interaction, and the factors that modulate their respective behavioral influences in the context of moral judgment. In two functional magnetic resonance imaging (fMRI) studies using moral dilemmas as probes, we apply the methods of cognitive neuroscience to the study of moral judgment. We argue that moral dilemmas vary systematically in the extent to which they engage emotional processing and that these variations in emotional engagement influence moral judgment. These results may shed light on some puzzling patterns in moral judgment observed by contemporary philosophers.

The present study was inspired by a family of ethical dilemmas familiar to contemporary moral philosophers (*1*). One such dilemma is the trolley dilemma: A runaway trolley is headed for five people who will be killed if it proceeds on its present course. The only way to save them is to hit a switch that will turn the trolley onto an alternate set of tracks where it will kill one person instead of five. Ought you to turn the trolley in order to save five people at the expense of one? Most people say yes. Now consider a similar problem, the footbridge dilemma. As before, a trolley threatens to kill five people. You are standing next to a large stranger on a footbridge that spans the tracks, in between the oncoming trolley and the five people. In this scenario, the only way to save the five people is to push this stranger off the bridge, onto the tracks below. He will die if you do this, but his body will stop the trolley from reaching the others. Ought you to save the five others by pushing this stranger to his death? Most people say no.

Taken together, these two dilemmas create a puzzle for moral philosophers: What makes it morally acceptable to sacrifice one life to save five in the trolley dilemma but not in the footbridge dilemma? Many answers have been proposed. For example, one might suggest, in a Kantian vein, that the difference between these two cases lies in the fact that in the footbridge dilemma one literally uses a fellow human being as a means to some independent end, whereas in the trolley dilemma the unfortunate person just happens to

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be in the way. This answer, however, runs into trouble with a variant of the trolley dilemma in which the track leading to the one person loops around to connect with the track leading to the five people (*1*). Here we will suppose that without a body on the alternate track, the trolley would, if turned that way, make its way to the other track and kill the five people as well. In this variant, as in the footbridge dilemma, you would use someone's body to stop the trolley from killing the five. Most agree, nevertheless, that it is still appropriate to turn the trolley in this case in spite of the fact that here, too, we have a case of "using." These are just one proposed solution and one counterexample, but together they illustrate the sort of dialectical difficulties that all proposed solutions to this problem have encountered. If a solution to this problem exists, it is not obvious. That is, there is no set of consistent, readily accessible moral principles that captures people's intuitions concerning what behavior is or is not appropriate in these and similar cases. This leaves psychologists with a puzzle of their own: How is it that nearly everyone manages to conclude that it is acceptable to sacrifice one life for five in the trolley dilemma but not in the footbridge dilemma, in spite of the fact that a satisfying justification for distinguishing between these two cases is remarkably difficult to find (*2*)?

We maintain that, from a psychological point of view, the crucial difference between the trolley dilemma and the footbridge dilemma lies in the latter's tendency to engage people's emotions in a way that the former does not. The thought of pushing someone to his death is, we propose, more emotionally salient than the thought of hitting a switch that will cause a trolley to produce similar consequences, and it is this emotional response that accounts for people's tendency to treat these cases differently. This hypothesis concerning these two cases suggests a more general hypothesis concerning moral judgment: Some moral dilemmas (those relevantly similar to the footbridge dilemma) engage emotional processing to a greater extent than others (those relevantly similar to the trolley dilemma), and these differences in emotional engagement affect people's judgments. The present investigation is an attempt to test this more general hypothesis. Drawing upon recent work concerning the neural correlates of emotion (*3*–*5*), we predicted that brain areas associated with emotion would be more active during contemplation of dilemmas such as the footbridge dilemma as compared to during contemplation of dilemmas such as the trolley dilemma. In addition, we predicted a pattern of behavioral interference similar to that observed in cognitive tasks in which automatic processes can influence responses, such as the Stroop task (in which the identity of a color word can interfere with participants' ability to name the color in which it is displayed; e.g., the ability to say "green" in response to the word "red" written in green ink) (*6*, *7*). In light of our proposal that people tend to have a salient, automatic emotional response to the footbridge dilemma that leads them to judge the action it proposes to be inappropriate, we would expect those (relatively rare) individuals who nevertheless judge this action to be appropriate to do so against a countervailing emotional response and to exhibit longer reaction times as a result of this emotional interference. More generally, we predicted longer reaction times for trials in which the participant's response is incongruent with the emotional response (e.g., saying "appropriate" to a dilemma such as the footbridge dilemma). We predicted the absence of such effects for dilemmas such as the trolley dilemma which, according to our theory, are less likely to elicit a strong emotional response.

In each of two studies, Experiments 1 and 2, we used a battery of 60 practical dilemmas (*8*). These dilemmas were divided into "moral" and "non-moral" categories on the basis of the responses of pilot participants (*8*). (Typical examples of non-moral dilemmas posed questions about whether to travel by bus or by train given certain time constraints and about which of two coupons to use at a store.) Two independent coders evaluated each moral dilemma using three criteria designed to capture the difference between the intuitively "up close and personal" (and putatively more emotional) sort of violation exhibited by the footbridge dilemma and the more intuitively impersonal (and putatively less emotional) violation exhibited by the trolley dilemma (*8*, *9*). Moral dilemmas meeting these criteria were assigned to the "moral-personal" condition, the others to the "moral-impersonal" condition. Typical moral-personal dilemmas included a version of the footbridge dilemma, a case of stealing one person's organs in order to distribute them to five others, and a case of throwing people off a sinking lifeboat. Typical moral-impersonal dilemmas included a version of the trolley dilemma, a case of keeping money found in a lost wallet, and a case of voting for a policy expected to cause more deaths than its alternatives. Participants responded to each dilemma by indicating whether they judged the action it proposes to be "appropriate" or "inappropriate."

In each experiment, nine participants (*10*) responded to each of 60 dilemmas (*11*) while undergoing brain scanning using fMRI (*12*). Figures 1 and 2 describe brain areas identified in Experiment 1 by a thresholded omnibus analysis of variance (ANOVA) performed on the functional images (*13*). In each case, the

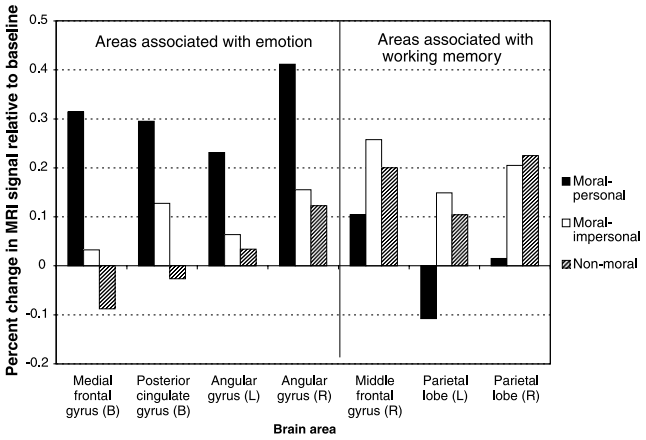

Fig. 1. Effect of condition on activity in brain areas identified in Experiment 1. R, right; L, left; B, bilateral. Results for the middle frontal gyrus were not replicated in Experiment 2. The moral-personal condition was significantly different from the other two conditions in all other areas in both Experiments 1 and 2. In Experiment 1 the medial frontal and posterior cingulate gyri showed significant differences between the moral-impersonal and non-moral conditions. In Experiment 2 only the posterior cingulate gyrus was significantly different in this comparison. Brodmann's Areas and Talairach (*28*) coordinates (*x*, *y*, *z*) for each area are as follows (left to right in graph): 9/10 (1, 52, 17); 31 (−4, −54, 35); 46 (45, 36, 24); 7/40 (−48, −65, 26); 7/40 (50, −57, 20).

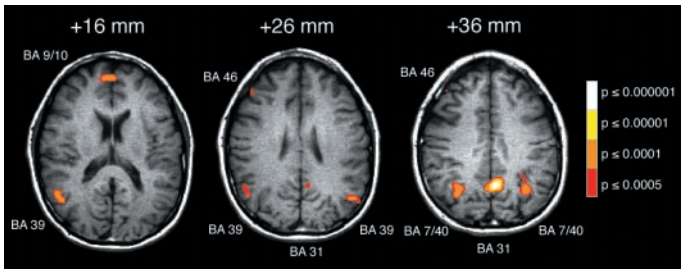

Fig. 2. Brain areas exhibiting differences in activity between conditions shown in three axial slices of a standard brain (*28*). Slice location is indicated by Talairach (*28*) *z* coordinate. Data are for the main effect of condition in Experiment 1. Colored areas reflect the thresholded F scores. Images are reversed left to right to follow radiologic convention.

ANOVA identified all brain areas differing in activity among the moral-personal, moral-impersonal, and non-moral conditions. Planned comparisons on these areas revealed that medial portions of Brodmann's Areas (BA) 9 and 10 (medial frontal gyrus), BA 31 (posterior cingulate gyrus), and BA 39 (angular gyrus, bilateral) were significantly more active in the moral-personal condition than in the moral-impersonal and the non-moral conditions. Recent functional imaging studies have associated each of these areas with emotion (*5*, *14*–*16*). Areas associated with working memory have been found to become less active during emotional processing as compared to periods of cognitive processing (*17*). BA 46 (middle frontal gyrus, right) and BA 7/40 (parietal lobe, bilateral)—both associated with working memory (*18*, *19*)—were significantly less active in the moral-personal condition than in the other two conditions. In BA 39 (bilateral), BA 46, and BA 7/40 (bilateral), there was no significant difference between the moral-impersonal and the non-moral condition (*20*, *21*).

Experiment 2 served to replicate the results of Experiment 1 (*22*) and to provide behavioral data concerning participants' judgments and reaction times. Planned comparisons on the seven brain areas identified in Experiment 1 yielded results nearly identical to those of Experiment 1 with the following differences. In Experiment 2 there was no difference in BA 9/10 between the moral-impersonal and non-moral conditions, and no differences were found for BA 46 (*23*).

Reaction time data from Experiment 2 are described by Fig. 3. Our theory concerning emotional interference predicted longer reaction times for emotionally incongruent responses, which occur when a participant responds "appropriate" in the moral-personal condition (e.g., judging it "appropriate" to push the man off the footbridge in the footbridge dilemma)

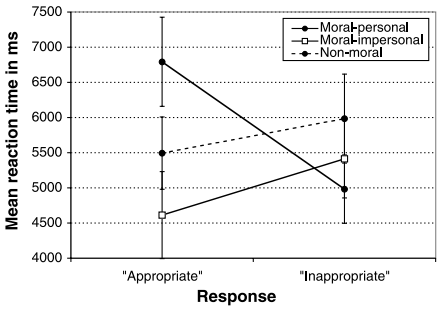

Fig. 3. Mean reaction time by condition and response type in Experiment 2. A mixed-effects ANOVA revealed a significant interaction between condition and response type [$F(2, 8) = 12.449$, $P < 0.0005$). Reaction times differed significantly between responses of "appropriate" and "inappropriate" in the moral-personal condition [$t(8) = 4.530$, $P < 0.0005$] but not in the other conditions ($P > 0.05$). Error bars indicate two standard errors of the mean.

but which do not occur in the moral-impersonal and non-moral conditions. As predicted, responses of "appropriate" (emotionally incongruent) were significantly slower than responses of "inappropriate" (emotionally congruent) within the moral-personal condition, and there was no significant difference in reaction time between responses of "appropriate" and "inappropriate" in the other two conditions. In fact, the data exhibit a trend in the opposite direction for the other two conditions (*24*), with responses of "inappropriate" taking slightly longer than responses of "appropriate."

In each of the brain areas identified in both Experiments 1 and 2, the moral-personal condition had an effect significantly different from both the moral-impersonal and the non-moral conditions. All three areas showing increased relative activation in the moral-personal condition have been implicated in emotional processing. The behavioral data provide further evidence for the increased emotional engagement in moral-personal condition by revealing a reaction time pattern that is unique to that condition and that was predicted by our hypothesis concerning emotional interference. Moreover, the presence of this interference effect in the behavioral data strongly suggests that the increased emotional responses generated by the moral-personal dilemmas have an influence on and are not merely incidental to moral judgment (*25*). These data also suggest that, in terms of the psychological processes associated with their production, judgments concerning "impersonal" moral dilemmas more closely resemble judgments concerning non-moral dilemmas than they do judgments concerning "personal" moral dilemmas.

The trolley and footbridge dilemmas emerged as pieces of a puzzle for moral philosophers: Why is it acceptable to sacrifice one person to save five others in the trolley dilemma but not in the footbridge dilemma? Here we consider these dilemmas as pieces of a psychological puzzle: How do people manage to conclude that it is acceptable to sacrifice one for the sake of five in one case but not in the other? We maintain that emotional response is likely to be the crucial difference between these two cases. But this is an answer to the psychological puzzle, not the philosophical one. Our conclusion, therefore, is descriptive rather than prescriptive. We do not claim to have shown any actions or judgments to be morally right or wrong. Nor have we argued that emotional response is the sole determinant of judgments concerning moral dilemmas of the kind discussed in this study. On the contrary, the behavioral influence of these emotional responses is most strongly suggested in the performance of those participants who judge in spite of their emotions.

What has been demonstrated is that there are systematic variations in the engagement of emotion in moral judgment. The systematic nature of these variations is manifest in an observed correlation between (i) certain features that differ between the trolley dilemma and the footbridge dilemma and (ii) patterns of neural activity in emotion-related brain areas as well as patterns in reaction time. Methodological constraints led us to characterize these "certain features" by means of a highly regimented distinction between actions that are "personal" and "impersonal" (*8*). This personal-impersonal distinction has proven useful in generating the present results, but it is by no means definitive. We view this distinction as a useful "first cut," an important but preliminary step toward identifying the psychologically essential features of circumstances that engage (or fail to engage) our emotions and that ultimately shape our moral judgments—judgments concerning hypothetical examples such as the trolley and footbridge dilemmas but also concerning the more complicated moral dilemmas we face in our public and private lives. A distinction such as this may allow us to steer a middle course between the traditional rationalism and more recent emotivism that have dominated moral psychology (*26*).

The present results raise but do not answer a more general question concerning the relation between the aforementioned philosophical and psychological puzzles: How will a better understanding of the mechanisms that give rise to our moral judgments alter our attitudes toward the moral judgments we make?

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8. Testing materials (dilemmas) are available from *Science* Online at www.sciencemag.org/cgi/content/full/293/5537/2105/DC1.
9. The three criteria are as follows: First, coders indicated for each dilemma whether the action in question could "reasonably be expected to lead to serious bodily harm." Second, they were asked to indicate whether this harm would be "the result of deflecting an existing threat onto a different party." Our use of this criterion, which parallels a distinction made by Thomson (*1*), is a an attempt to operationalize an intuitive notion of "agency." Intuitively, when a harm is produced by means of deflecting an existing threat, the agent has merely "edited" and not "authored" the resulting harm, and thus its contemplation is less emotionally engaging. Lastly, coders were asked to indicate whether the resulting harm would "befall a particular person or a member or members of a particular group of people." Here the question, in intuitive terms, is whether the victim is "on stage" in the dilemma. The moral dilemmas of which the coders said that the action in question (a) could reasonably be expected to lead to serious bodily harm (b) to a particular person or a member or members of a particular group of people (c) where this harm is not the result of deflecting an existing threat onto a different party were assigned to the "moral-

personal" condition; the others were assigned to the "moral-impersonal" condition.
10. Participants were five male and four female undergraduates in Experiment 1, four male and five female in Experiment 2. All participants provided written informed consent.
11. Dilemmas were presented in random order in a series of six blocks of ten trials each in Experiment 1, twelve blocks of five trials each in Experiment 2. Participants' responses to versions of the trolley and footbridge dilemmas were consistent with the intuitions described above (*8*).
12. Stimuli (dilemmas) were presented on a visual display projected into the scanner. Each dilemma was presented as text through a series of three screens, the first two describing a scenario and the last posing a question about the appropriateness of an action one might perform in that scenario (e.g., turning the trolley). Participants were allowed to read at their own pace, pressing a button to advance from the first to the second screen and from the second to the third screen. After reading the third screen participants responded by pressing one of two buttons ("appropriate" or "inappropriate"). Participants were given a maximum of 46 s to read all three screens and respond. The intertrial interval (ITI) lasted for a minimum of 14 s (seven images) in each trial, allowing the hemodynamic response to return to baseline after each trial. Baseline activity was defined as the mean signal across the last four images of the ITI. Task-related activity was measured using a "floating window" of eight images surrounding (four before, one during, and three after) the point of response. (This window includes three post-response images in order to allow for the 4- to 6-s delay in hemodynamic response to neural activation.) This "floating window" technique combined the benefits of an event-related design with the flexibility required to image a complex and temporally extended psychological process that inevitably proceeds at its own pace. In Experiment 1, functional images were acquired in 20 axial slices parallel to the AC-PC (anterior commisure–posterior commisure) line [spiral pulse sequence; repetition time (TR), 2000 ms; echo time (TE), 45 ms; flip angle, 80°; field of view (FOV), 240 mm; 3.75-mm isotropic voxels] using a 1.5-T GE Signa whole-body scanner. In Experiment 2, functional images were acquired in 22 axial slices parallel to the AC-PC line (echoplanar pulse sequence; TR, 2000 ms; TE, 25 ms; flip angle, 90°; FOV, 192 mm; 3.0-mm isotropic voxels; 1-mm interslice spacing) using a 3.0-T Siemens Allegra head-dedicated scanner.
13. Before statistical analysis, images for all participants were coregistered using a 12-parameter automatic algorithm. Images were smoothed with an 8-mm full-width at half maximum (FWHM) 3D Gaussian filter. In Experiment 1, the images contained in each response window were analyzed with the use of a voxelwise mixed-effects ANOVA with participant as a random effect, and dilemma-type, block, and response-relative image as fixed effects. Statistical maps of voxelwise F-ratios were thresholded for significance ($P < 0.0005$) and cluster size ($\geq$8 voxels). In Experiments 1 and 2, planned comparisons for significant differences between conditions ($P < 0.05$, cluster size $\geq$8 voxels) were made for each area identified by the thresholded ANOVA in Experiment 1.
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20. In BA 7/40 (right) a small minority of voxels (10 of 91) showed a significant difference between the moral-impersonal and non-moral conditions.
21. Due to magnetic susceptibility artifact we were unable to image the orbitofrontal cortex, an area thought by some to play an important role in moral judgment (*3*).
22. Experiments 1 and 2 were not identical (*8*). Experiment 2 employed some modified versions of dilemmas from Experiment 1 as well as some new dilemmas in order to avoid a confound present in the design of the behavioral aspect of Experiment 1 (*24*).
23. The replicated results for BAs 9/10, 31, and bilateral 7/40 were achieved at a higher significance threshold in Experiment 2 ($P < 0.01$) than in Experiment 1.
24. A potential confound in the design of the behavioral aspect of the present study deserves attention. One might suppose that participants respond more slowly when giving an "unconventional" response, i.e., a response that differs from that of the majority. One might suppose further that the moral-personal condition makes greater use of dilemmas for which the emotionally incongruent response is also the unconventional response (as in judging that one may push the man off the footbridge in the footbridge dilemma), thus confounding emotional incongruity with unconventionality in participants' responses. Therefore, an effect that we attribute to emotional engagement may simply be an effect of the conventionality of participants' responses. To deconfound these factors, in Experiment 2 we included additional moral-personal dilemmas for which the conventional response was emotionally incongruent rather than congruent. For example, one dilemma asked whether it is appropriate to smother one's crying baby to death in order to prevent its crying from summoning enemy soldiers who will kill oneself, the baby, and a number of others if summoned. Most participants judged this action to be appropriate in spite of their putative emotional tendencies to the contrary. As predicted by our hypothesis, reaction times in such cases were significantly longer [t (8) = 4.332, $P < 0.0001$] than the reaction times for conventional and emotionally congruent responses, as were typically made in response to the footbridge dilemma. Thus, after controlling for conventionality, reaction times in the moral-personal condition are longer for trials which, according to our theory, reflect a judgment that is emotionally incongruent rather than congruent.
25. Although our conclusion concerning the behavioral influence of the observed emotional responses does not require that the emotion-related areas identified in Experiments 1 and 2 be different from areas that show increased activity in response to more basic kinds of emotional stimuli, one might wonder to what extent they do differ from such areas. We made a preliminary attempt to answer this question in the form of an addendum study to Experiment 1. Five participants responded to moral-personal and moral-impersonal dilemmas as in Experiments 1 and 2. Participants also performed a task in which they named the colors of visually presented emotional and neutral words, a task similar to the one used by Isenberg *et al.* (*27*). The emotional word stimuli were extracted from the text of the moral dilemmas by three independent coders. Neutral words and additional emotional words were drawn from materials used by Isenberg *et al.* (*27*). A comparison of the emotional and neutral word conditions (t test, $P < 0.05$, cluster size $\geq$8 voxels) revealed no significant activation in the emotion-related areas identified in Experiment 1 and only a marginal activation (9 out of 123 voxels) in one of the working memory areas (left BA 7/40). This comparison did, however, reveal activations in numerous other areas. A comparison of the moral-personal and moral-impersonal conditions from the same five sessions replicated the activations observed in Experiments 1 and 2 in BA 9/10 (55 of 64 voxels at $P < 0.05$) and left BA 7/40 (40 of 123 voxels at $P < 0.05$). These results demonstrate, at the very least, that the effects observed in Experiments 1 and 2 in the medial frontal gyrus (BA 9/10) cannot be attributed to the mere reading of emotional words. This area, more than any of the others we have identified, is likely to play a role in the integration of emotion and cognition in complex decision-making (*3*, *5*).
26. J. D. Haidt, *Psych. Rev.*, in press.
27. N. Isenberg *et al.*, *Proc. Natl. Acad. Sci. U.S.A.* **96**, 10456 (1999).
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29. We gratefully acknowledge M. Gilzenrat, N. Isenberg, P. Jablonka, J. Kroger, and T.-Q. Li for their contributions to this project. Supported in part by grants from the Pew Charitable Trusts (no. 97001533-000) and the National Science Foundation (no. 2556566).

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BAFF-R, a Newly Identified TNF Receptor That Specifically Interacts with BAFF

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B cell homeostasis has been shown to critically depend on BAFF, the B cell activation factor from the tumor necrosis factor (TNF) family. Although BAFF is already known to bind two receptors, BCMA and TACI, we have identified a third receptor for BAFF that we have termed BAFF-R. BAFF-R binding appears to be highly specific for BAFF, suggesting a unique role for this ligand-receptor interaction. Consistent with this, the BAFF-R locus is disrupted in A/WySnJ mice, which display a B cell phenotype qualitatively similar to that of the BAFF-deficient mice. Thus, BAFF-R appears to be the principal receptor for BAFF-mediated mature B cell survival.

The TNF family ligand BAFF, also known as TALL-1, THANK, BLyS, and zTNF4 (*1*–*5*), enhances B cell survival in vitro (*6*) and has recently emerged as a key regulator of peripheral B cell populations in vivo. Mice overexpressing BAFF display mature B cell hyperplasia and symptoms of systemic lupus erythaematosus (SLE) (*7*). Likewise, some SLE patients have significantly increased levels of BAFF in their

方舟子：科学地解决道德难题？

方舟子/文

当代哲学的一个任务是解决道德伦理问题，为此哲学家们经常要辩论一些假想的难题，其中较著名的一个是“电车难题”：假设有一列失控的有轨电车飞奔而来，前面有两条轨道，一条站着五个人，一条站着一个人。如果不扳道岔，电车将冲向第一条轨道压死五个人。那么是否应该扳道岔，将电车引向另一条轨道，压死上面的那一个人？大多数人会回答应该，因为牺牲一个人拯救五个人是值得的。

现在，再考虑另一个难题：同样有一列失控的有轨电车飞奔而来，前方的轨道上站着五个人处于危险之中。在电车和五个人中间，隔着一座天桥，桥上站着一位陌生的大胖子。拯救这五个人的唯一办法，是把这个大胖子推下天桥，电车将他撞死后就会停下来。那么是否应该把这个人推下桥去拯救五个人？大多数人会对这个“天桥难题”说不应该。

为什么同样是牺牲一个人拯救五个人，人们却会做出不同的道德判断？对诸如此类的问题的争论，使得哲学家们有活可干。一种经典的解释是，在“电车难题”中，牺牲掉的那个人是不幸碰巧站在另一条轨道上，并没有被直接用来拯救另五个人；而在“天桥难题”中，胖子是直接被用来拯救五个人的，因此直接利用一个人的生命来拯救他人，是不道德的。那么我们再来看一个“电车难题”的变型：假设站着一个人的那条轨道的另一端是跟另一条轨道相连的，即形成一个回路，如果那上面没有这个人，电车会从这条轨道绕回来到另一条轨道压死五个人。在压死这个人后，电车会停下来，不会危及另五个人。在这种情况下，是否应该把电车引向站着一个人的轨道去压死他？虽然这一次，这个人是被直接利用了，大多数人仍然会回答应该。

可见，“直接利用是不道德的”的解释遇到了麻烦。还有人提出了别的解释，但也都有人想到了与之相抵触的例子。至今还未找到一个能被普遍接受的解释。有心理学家认为，“天桥难题”之所以和“电车难题”的选择结果不同，是因为将一个人推下桥这种做法让人在感情上接受不了，觉得太残忍。也就是说，感情会影响人们的道德判断。但是哲学家们普遍认为，道德判断应该是在理性思考的基础上做出的，不应带着感情。

最近，美国普林斯顿大学的心理学家用实验对这个“感情说”进行了验证。他们让试验对象对 60 个难题做出决定，并用“功能性磁共振影像技术”监测大脑功能区的变化。大脑功能区被激活后，那里的血流和脑氧代谢都增加，用磁共振对大脑进行扫描就

可以形象地展现大脑各个功能区的活动情况。这 60 个难题分为三组：一组是与人身密切相关(也即可能会调动感情)的道德难题，包括“ 天桥难题 ”和其他类似的道德难题(像偷了一个人的内脏器官去拯救五个人，是否应该？在救生艇因超载面临沉没时，是否应该把某个人扔到海里？等等)；一组是与人身关系不密切或无关的非人化的道德难题，包括“ 电车难题 ”和类似的道德难题(例如捡到了钱，该不该还给失主？)；还有一组做为空白对照，是与道德无关的难题(例如出门旅行，是坐汽车还是坐火车好？)。

结果表明，人们在判断人身化道德难题时，与判断非人化道德难题和非道德难题相比，大脑中与感情有关的区域明显变得活跃，而与记忆有关的区域则活跃程度明显降低(以前的研究已表明，人们在处理感情问题时，大脑记忆区域受到抑制)。少数人对“ 天桥难题 ”这类问题做出了“ 应该 ”的回答，而他们花的时间要比那些回答“ 不应该 ”的人长得多，这也是可以理解的，他们要花更多的时间思考，让理智战胜感情。而对非人化道德难题和非道德难题，回答“ 应该 ”和“ 不应该 ”所用的时间没有差别。

这个实验结果，对主流哲学家是个打击，他们向来主张道德判断是纯理性的，而现在却必须考虑其中的感情因素。但是，这个实验其实并没有解决这些道德难题。它并没有告诉人们，把一个人推下天桥救其他人是对是错，而是告诉人们，为什么人们会做出是对是错的选择。换句话说，它只是揭示了人们做道德判断时的一个心理机制。有一个问题仍然有待解决：在我们对道德判断的心理机制有了更好的理解之后，是否会影响我们的道德决定？如果会的话，将会有怎样的影响？在我们知道对“ 天桥难题 ”的选择原来是受情绪影响后，是否会有更多的人狠下心来理智地选择“ 应该 ”？是否应该选择“ 应该 ”？哲学家们不必担心失业。

刊载于《南方周末》2001 年 10 月 4 日

“方舟子剽窃铁证如山”的真相

作者：方舟子

最近，有多位国内网友来信反映，一篇题为“方舟子剽窃铁证如山”、署名“离乡客”（即在美国北卡大学教堂山分校物理系从事研究的南京大学物理系凝聚态物理专业理学博士赵纪军）的文章被张贴到国内各大论坛，试图达到败坏我的名声的目的。这篇文章采用断章取义的汉英“对比”手法，诬蔑我发表在《南方周末》上的一篇介绍国外最新科学成果的科学小品《科学地解决道德问题？》

剽窃美国《科学》杂志上的一篇论文（他是根据我在文章后注的原始论文出处找到这篇论文的）。对这位骗子帮凶的诽谤，我以前已做过驳斥。网上骗子“昏教授”在早些时候曾向《科学》诬告我剽窃。《科学》对此做了调查。有人向《科学》编辑询问调查的结果。《科学》编辑在回信中指出（信的原文附后），虽然我的这篇文章不符合美国新闻报道的标准，但是剽窃的指控是难以成立的，因为我在文章中说明该项研究工作是由普林斯顿大学的研究者做的，并没有用第一人称暗示研究工作是我做的，也没有照抄《科学》论文的语言（即我是用自己的语言做的介绍）。

赵纪军的指控已构成了对我的恶意诽谤，在必要的时候我将追究其法律责任。

2001.11.3.

附：《科学》编辑的答复

Although I do not read or speak Chinese, I have had access to an English version of Fang's article, translated by an independent source. We believe that Fang's article would not be considered acceptable journalism in the United States. He did not give the names of the researchers who carried out the research or the journal in which it was published, nor did he include quotes from other scientists. All these aspects would be essential for a journalistic article in a US publication.

However, a charge of plagiarism would be difficult to uphold since Fang did say the work was performed by researchers at Princeton University, and--unless the translation I have is wrong--he neither implied that the work was his own by writing in the first person nor directly copied the language in the Science paper.

脚踏两只船的院士候选人

方舟子

中国科学院、工程院院士每两年就增选一次，但中国科研人员的水平却不可能在短期内就有多大的提升，其结果就必然是院士越选越多，也越选越滥，水平越来越让人不敢恭维，甚至弄虚作假之事也时有发生。

中国科学院在 9 月 6 日发表《关于公布 2005 年院士增选初步候选人名单的公告》，公布各学部院士对本学部中国科学院院士增选有效候选人进行通信投票的结果，确认初步候选人 145 人。其中有两人身份特殊，引起了许多人的注意。这两人——佘振苏和肖传国——虽然分别以北京大学和华中科技大学工作人员的身份参选，但细心的人们发现，他们同时还分别在美国加州大学洛杉矶分校和纽约大学担任全职的教师。参选中国科学院院士的基本要求是必须在中国全职工作。一个人能否同时在中、美两国担任两个全职职务？这种脚踏两只船的人是否符合中国科学院院士候选人的要求？一时议论纷纷。

这两名候选人一下子成了舆论的焦点，使人对其履历产生了兴趣，发现了更多的有趣之处。比如人们发现，佘振苏居然是“国际严新气功学会”科学顾问，写过一篇修炼严新气功的体会文章《严新气功与人生事业》。佘教授在文中提到，严新气功是他人生中的一个重要转折点，也是他人生中的一个里程碑。严新气功的宣传材料称：“他在繁忙的工作之余，仍力争参加每一次重要的严新气功活动。佘教授修炼严新气功数载，不仅身心得到极大的改善，而且在事业上突飞猛进。”

年轻的读者可能对严新感到陌生。他在上个世纪 80 年代末、90 年代初，在中国的名头可谓如雷贯耳，号称能从北京发功改变广州的分子结构，声称当年大兴安岭的森林火灾就是他发功给灭的。满中国举办“带功报告”，一时吸引了无数追随者。后来在中国吃不大开了，就到美国传功去了。我认识的留学生中，有的也是其狂热追随者，不惜驱车数百英里、买数百美元一张的门票去听他一场“带功报告”，并且经常根据其要求忍饥挨饿“辟谷”一周。此前我倒是不知道有美国大学的教授会是严新气功的支持者，更没料到现在要进军中国科学院院士了。

肖传国的简历则更让人觉得矛盾重重、扑朔迷离。他的出生年月，有的简历写的是 1957 年 1 月，另一个简历是 1955 年 12 月，差了近两年。他从湖北医学院毕业的时间，有的简历写的是 1975 年 7 月，另一个写的是 1975 年 12 月。

他到纽约大学医学院任“副教授”的任职时间，有的写的是 2000 年至今，有的写的是

2001 年 1 月至今。

肖传国是不是一开始就在纽约大学医学院任“副教授”，也是很成问题的。在纽约大学医学院的网页上，他的头衔一直写的是比副教授低一级的“助理教授”，直到几天前才改成“临床副教授”。对美国大学教师体制有些了解的人都知道，“临床副教授”并非真正的副教授。美国大学的副教授一般就是所谓“终身教授”，可带博士研究生，能再升为正教授，对其评选非常严格，而“临床副教授”则没有副教授的这些权利，其实只是给一些全职技术人员的空头衔。

在肖传国的简历中，类似这样拔高自己的地方还有。例如，他在简历中洋洋洒洒列了自 1982 年以来发表的 26 篇英文论文。仔细一看，他竟是把参加学术会议的文章摘要也都当成论文给列进去了。生物医学的学术会议一般并不要求与会者提交完整的论文，而只要求提交一份不到半页的摘要，一般不经审稿就都接受了，具体内容则在会议上通过张贴等方式公布。这些会议摘要有时会合起来作为某个杂志的增刊出版，但是没有人会把它当论文。学生们因为发表的论文太少，在找工作时有时候会把会议摘要也写入履历中，但是也会清清楚楚地写明那是会议摘要或会议张贴，否则将被视为是捏造论文，是欺诈。没想到院士候选人居然也玩用会议摘要冒充论文的把戏。

肖传国在国际期刊上发表的论文实在是太少了，20 多年来，已经发表的仅有 4 篇，总共被别人引用了只有 9 次，可见在国际学术界毫无影响。但是他却在简历中自称获得了“国际神经泌外最高奖”，其实他罗列的两个奖项（美国泌尿学会 Jack Lapides 奖和美国泌尿学会成就奖），前者是很容易获得的美国泌尿学会年会会议摘要“竞赛奖”，后者虽然是个大奖，但是在历年获奖者名单中，却没找到他的名字。

肖传国还有一项非常惊人的成就，“1988 年，他提出国际公认的‘肖氏反射弧’原理——外科领域里仅有的几项以中国人名字命名的手术原理。”在医学文献数据库和在网上检索“肖氏反射弧”的英文名称，结果都是零。检索肖传国自称根据该原理实施的“肖氏术”的英文名称，只出来一个网页，是肖传国在北京的一次学术会议上的报告的题目。据业内专家介绍，所谓“肖氏反射弧”、“肖氏术”就连在国内医学界也没有得到认可。

中国科学院、工程院院士每两年就增选一次，但中国科研人员的水平却不可能在短期内就有多大的提升，其结果就必然是院士越选越多，也越选越滥，水平越来越让人不敢恭维，甚至弄虚作假之事也时有发生。这两名院士候选人是因为其特殊身份而引起了人们的特别关注，才发现了种种问题，而其他候选人中，经不起同样“关注”的还有多少？